DAKOTA ENVIRONMENTAL, INC.

Engineers...Hydrogeologists...Geologists...Remedial Specialists

February 19, 2024

Jessica Tesch
Hamlin County Zoning
PO Box 237
Hayti, SD 57241

Re: Proposed Animal Waste Management System Expansion
Sunrise Dairy, Hamlin County, SD
DEC Project No. 23015

Dear Jessica:

Please find enclosed information regarding a proposed expansion to the existing confined animal feeding operation located in the northeast quarter of Section 36, Township 115 North, Range 51 West in Hamlin County. It is proposed to expand the existing permit from 1,700 mature dairy cattle and 300 calves to 3,400 mature dairy cattle and 300 calves.

The existing facility consists of a dairy operation currently permitted for 1,700 head of mature cattle and 300 head of small calves, which has been constructed in phases beginning in 2004. In 2015, the Hamlin County conditional use permit for the facility was approved to expand the facility to 3,000 head of mature cattle and 300 calves, which were to be housed in several proposed barns. One of the proposed barns was constructed in 2015, after which the facility was populated to its current level. Due to lack of further construction activity, the approval to construct further barns has expired, leaving the existing Hamlin permit at its current level of 1,700 head of mature cattle and 300 calves. The application is therefore being made to regain the number of head previously approved in 2015, as well as 400 additional head.

Dakota Environmental has been retained by Sunrise Dairy LLC to provide engineering services for various parts of the project. The information included with this letter is submitted to provide information required for a Class A Concentrated Animal Feeding Operation Permit. The following materials are listed in the order outlined in the zoning ordinance under "Information Required for Class A Concentrated Animal Feeding Operation Permit".

A. Owner's name, address, and telephone numbers: This information is listed on the conditional use application (not included in this packet).

B. Legal description of site and site plan: The site is located in the northeast quarter of section 36, T115N R51W, which is owned by the applicant. The site plan is included in Appendix B.

The construction proposed to allow expansion of the facility would consist of one large cross-ventilated freestall barn located south of the existing main entrance and parlor. This barn would replace the numerous naturally ventilated barns which were proposed to be constructed north of the existing barns in 2015. Placement of the proposed barn near the existing parlor would also eliminate the need to construct an additional parlor as was proposed in 2015. The existing calf barn would be removed to allow construction of this barn. In preparation for the expansion

approved in 2015, all manure containment structures necessary for the proposed population were previously constructed and are in place.

The location of the proposed barn shown on the site plan would necessitate a variance from the required 300 foot setback from the right of way of 466th Avenue. Though slightly more distance is available, application is made to decrease the setback distance to 100 feet.

C. **Number and type of animals:** The population of the existing site is 1,700 head of mature dairy cattle and 300 calves, or 2,731 animal units. It is proposed to expand the permit to 3,400 mature dairy cattle and 300 calves, or 5,162 animal units. This would represent an increase of 572 animal units over the level approved in 2015. The existing site is currently classified as a Class A, and would remain so.

A revised set of design calculations for the facility is also included in Appendix C, which details the volumes of manure, process wastewater, and stormwater which would report to the storage ponds, as well as the available volumes of the storage ponds. Adequate storage volume is available for 365 days of manure and wastewater production in the existing containments.

D. **Nutrient Management Plan:** The existing facility has a DENR approved Nutrient Management Plan as part of its coverage under the DENR General CAFO Permit. Portions of the approved Plan are included in Appendix D, including the DENR map of currently approved fields. The SD-CPA-63 spreadsheet contains details of the existing and proposed population, storage and application methods, and the land available for application. The spreadsheet indicates adequate land is included in the existing Plan to apply manure from the existing and proposed number of head in accordance with General Permit requirements, though preparation of additional fields for the plan is currently under way. The materials included represent only a summary of the DENR approved Plan document, which can be provided upon request.

E. **Manure management and operation plan:** An Operation and Maintenance Manual for the facility has been developed in accordance with General Permit standards and is included in Appendix E. In this document, the inspection, operation, maintenance, and record keeping practices and best management practices for the facility are outlined. These practices were developed to meet guidelines of the DENR General Permit, as well as the Natural Resource Conservation Service Waste Storage Facility and Nutrient Management Planning standards. Forms are included for record keeping purposes. The included document represents the current approved version included in the DENR General Permit for the facility.

F. **Management plan for fly and odor control:** This plan is included, in which the Best Management Practices and current and potential methods for controlling nuisances as much as possible are listed. It should be noted that the proposed expansion will require no additional manure storage structures, and will therefore not increase the amount of manure exposed to open air for transport of odor.

G. **Information on ability to meet designated setback requirements, including site plan to scale:** Scaled aerial photographs showing the site and required setbacks are included in Appendix G. The first shows the site relative to the half mile setback to neighboring residences and wells, of which none are known to be close to the setback limit. The second shows the site relative to the required right of way setbacks. The location of the proposed barn is shown relative to the 300 foot county road setback, as well as the requested 100 foot variance setback. Though routine maintenance of 466th Avenue is provided in varying extents by Hamlin and Deuel counties, Sunrise Dairy provides its own snow removal.

It is believed the proposed construction is in compliance with any other setbacks listed in the ordinance, as no municipalities, schools, or town and lake park districts are known within the required setback of 11,880 feet, nor are any fisheries known within 500 feet.

H. General Permit from South Dakota Department of Environment and Natural Resources if available for animal species: The existing facility operates under coverage by the South Dakota General Water Pollution Control Permit for Concentrated Animal Feeding Operations (Permit # SDG-0100207). The existing Certificate of Compliance letter for the existing facility is included in Appendix H.

The DENR letter dated May 11 2015 is also included, in which the plans and specifications for expanding the facility to 3,000 head of mature dairy cattle and 300 calves were approved. As with the county permit, only a portion of this expansion has been completed. Since application is being made to expand this approval by an additional 400 head of mature dairy cattle, a new review and approval by DENR will be required.

I. Review of plans and specifications and nutrient management plan by the South Dakota Department of Environment and Natural Resources: If the proposed expansion is issued conditional approval by Hamlin County, an application for expansion of the existing permit will be made to the SD DENR. This application will include plans and specifications for all proposed facilities, as well as any proposed modifications to the existing Nutrient Management Plan.

J. Information on soils, shallow aquifers, designated wellhead protection areas, and 100 year floodplain designation: Much of the site documentation required for the Conditional Use Permit was prepared and submitted during the application for the existing dairy, as well as during applications for previous expansions in 2013 and 2015. The First Occurrence of Aquifer Materials in Hamlin County map (DENR, 2001) indicates the site is not located over the Big Sioux Aquifer, and that no aquifers are present within 100 feet of the land surface. This map, as well as the following materials, are included in Appendix J.

The Hamlin County Zoning Map is also included, which shows the site relative to Aquifer Protection and Floodplain zones, which are not mapped as present at or near the site. The Hamlin township map from the Hamlin County Comprehensive Land Use Plan is also included, which shows a similar lack of features of concern. Soil borings performed in 2003 indicated an adequate thickness of clay till as required by the South Dakota General Water Pollution Control Permit for Concentrated Animal Feeding Operations (the General Permit). Logs of these borings are included, while their locations are shown on the site map in Appendix B.

K. Notification to whomever maintains the access road (township, county or state); notification to public water supply officials: Performed by the applicant.

L. Any other information as contained in the application and requested by the County Zoning Officer: None requested at this time.

We hope you will find the included information helpful in the consideration of this application. As always, please feel free to contact me if there are any questions, or additional information is required.

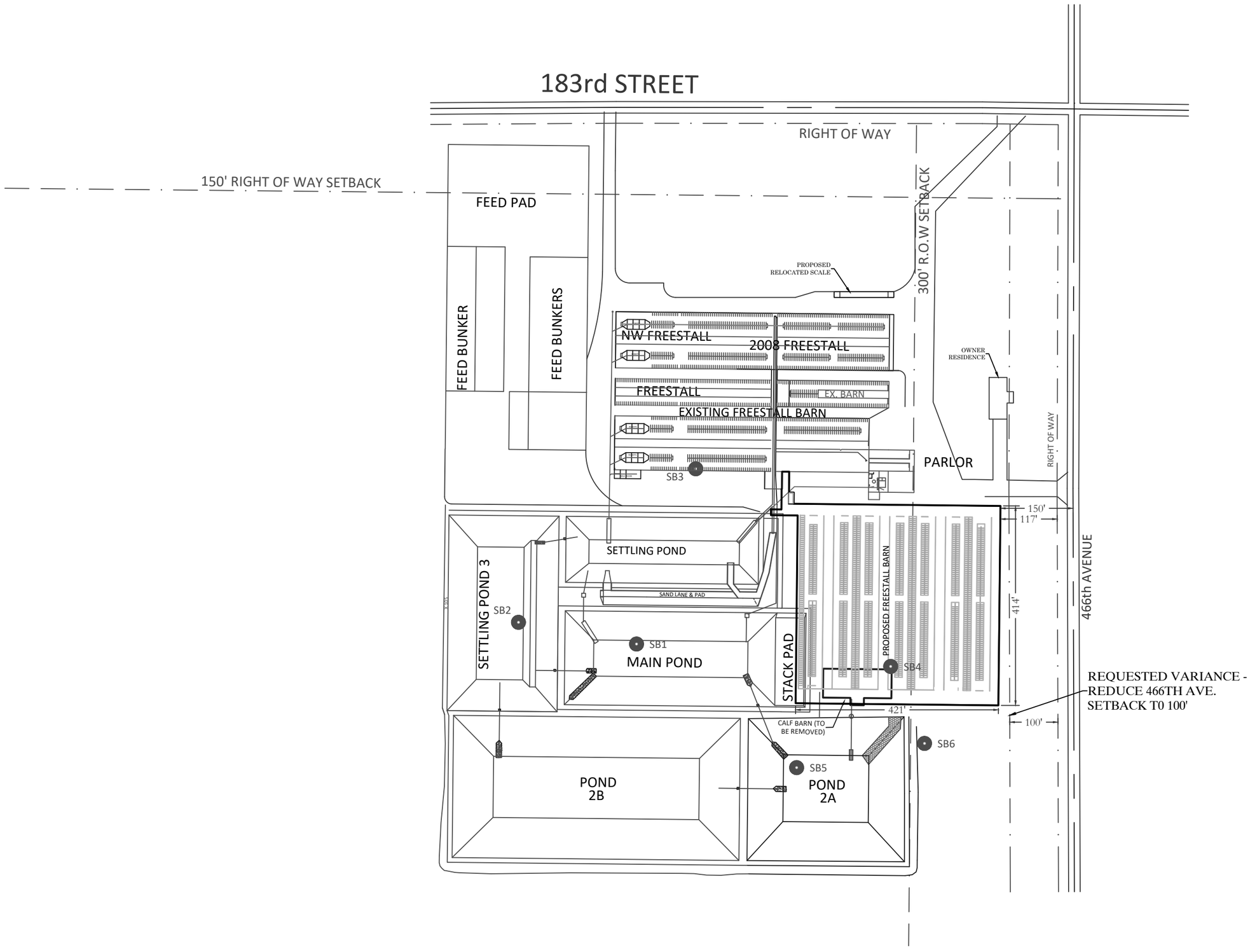
Sincerely,

Brian Friedrichsen, PE
Senior Engineer

P.O. Box 636, Huron, SD 57350
605-352-5610 1-800-888-0423 Fax 605-352-0951

APPENDIX B

SITE PLAN



REV.	DATE	DESCRIPTION	DRAWN:	CHECKED:
20	2/19/24	PROPOSED FREESTALL BARN	RR	BF
19	3/11/19	AS-BUILT ROBOT ROOMS	RR	BF
			BY	CHKD

DATE: 5/21/04

P.O. BOX 636 HURON, SD 57350 605-352-5610

SITE PLAN

SUNRISE DAIRY AWMS

DAKOTA ENVIRONMENTAL CONSULTANTS INCORPORATED

JOB NO: 23015

SCALE: 1"=200'

DWG: 4

APPENDIX C

NUMBER & TYPE OF ANIMALS, DESIGN CALCULATIONS

SUNRISE DAIRY

ANIMAL UNIT CALCULATIONS

MATURE DAIRY CATTLE: 3400 X 1.43 = 4862 ANIMAL UNITS

CALVES (FEEDER OR SLAUGHTER CATTLE): 300 X 1.0 = 300 ANIMAL UNITS

TOTAL EXISTING PLUS PROPOSED ANIMAL UNITS = 5,162

SUNRISE DAIRY AWMS
WASTE VOLUME CALCULATIONS

Dairy Waste - Milk Cows

Number	Weight	Manure, cf/day/cow	Manure, total cf/day	Storage Period, days	Manure Volume over Storage Period
3,400	1,400	2.4	8,160	365	**2,978,400**

Dairy Washwater & Flushwater

Number	Weight	Wash water, cf/day/1000#	Wash water, total cf/day	Storage Period, days	Wash water Volume over Storage Period
3,400	1,400	0.6	2,856	365	**1,042,440**

Dairy Bedding - Sand

Number	Weight	Sand lbs/day/1000#	Sand density, lbs/cf	Sand total cf/day	Storage Period, days	Estimated Recovery	Bedding Volume over Storage Period
3,400	1,400	35	105	1586.7	365	90	**57,913**

Dairy Waste - Calves

Number	Weight	Manure, cf/day/calf	Manure, total cf/day	Storage Period, days	Manure Volume over Storage Period
300	200	0.25	75	365	**27,375**

Total Volume of Manure, Water and Bedding to Ponds, cubic feet **4,106,128**

2/19/24

SUNRISE DAIRY AWMS
CONTRIBUTING AREA RUNOFF CALCULATIONS

CONCRETE SAND PAD RUNOFF VOLUME	
Area of pad (16 x 303)	4,848
25 yr 24 hr storm depth, ft	0.37
Runoff depth at CN 97, ft	0.36
25 yr 24 hr storm volume from pad area, cf	**1,745**
Annual rainfall depth, ft	2.05
Runoff % of annual rainfall at CN 97	50.0
Annual rainfall volume from pad area, cf	**4,969**

CLAY SAND PAD RUNOFF VOLUME	
Area of pad (420 x 50)	21,000
25 yr 24 hr storm depth, ft	0.37
Runoff depth at CN 90, ft	0.33
25 yr 24 hr storm volume from pad area, cf	**6,930**
Annual rainfall depth, ft	2.05
Runoff % of annual rainfall at CN 90	19.0
Annual rainfall volume from pad area, cf	**8,180**

SAND SETTLING LANE	
Area of lane (12 x 470)	5,640
24 hr 25 year storm depth, ft	0.37
25 yr 24 hr storm volume for settling lane area, cf	**2,087**
Annual rainfall depth, ft	2.05
Annual rainfall volume for settling lane pad area, cf	**11,562**

BARN ROOF RUNOFF	
Area of roof, square feet	87,147
25 yr 24 hr storm depth, ft	0.37
Runoff depth at CN 97, ft	0.36
25 yr 24 hr storm volume from roof area, cf	**31,373**
Annual rainfall depth, ft	2.05
Runoff % of annual rainfall at CN 97	50.0
Annual rainfall volume from pad area, cf	**89,326**

SUNRISE DAIRY AWMS
COMBINED SETTLING POND 1 and 2
VOLUME CALCULATIONS

POND DESIGN VOLUME AND ELEVATION SUMMARY

DESCRIPTION	EQN.		DEPTH (FT)	ELEV.	ACTUAL DESIGN USED
Existing Grade	G			105.0	
Inside Top of Berm Width (ft) @ el 102.3	W	129			
Inside Width Slope, horizontal feet per foot drop	SW	3			
Inside Top of Berm Length (ft) @ el 102.3	L	391.8			
Inside Length Slope, horizontal feet per foot drop	SL	3			
Constructed Top of Berm, including settlement	E+S			102.3	102.3
Settlement, % of embankment height	S=%(E-G)	0%	0.00		
Reference Elevation, operational top of berm (acres & elev. - ft.)	E	1.16		102.3	
Freeboard (in)	F	24	2.00		
Surface Area at Top of 24hr/25yr storm (acres/elev)	AS=E-F	1.02		100.3	
25yr/24hr Rainfall (in)	R	4.42			
Surface Area at Inside Top of Berm (ac, includes contrib. area)	OB	1.48			
Volume of 25yr/24hr Rainfall (cf)	VR=R*OB	23,751			
Volume Provided for 25yr/24hr Rainfall (cf)	avg(AS,O)*(AS-O)	23,992	0.55		
Maximum Surface Area and Operating Level (acres/elev)	O=E-F-R	0.98		99.8	99.8
Mean Annual Rainfall (in)	MAR	24.55			
Direct Mean Annual Rainfall within berms (cf)	DM=OB*MAR	131,918			
Mean Annual Lake Evaporation (in)	ME	33			
Evaporation Midpoint (elev)				94.9	
Surface Area at Evaporation Midpoint (ac)	ESA	0.67			
Net Evaporation at Midpoint (cf)	NE=ME*ESA	80,466			
Net Moisture used for design (evap[-] or rain[+]) (cf)	M	51,452	1.26		
Apparent Operation Level considering Net Moisture adj.	A=O-M	0.90		98.5	
Volume Provided for Net Moisture (cf)	avg(O,A)*(O-A)	51,639			
Waste Storage Depth (ft) excluding residual depth	D	9.80			
Surface area at top of residual layer (acres/elev)	SS=O-D	0.40		90.0	
Net Storage Depth provided	D-M	8.5	8.5		
Total Storage Volume from Net Storage Depth (cf)		**235,520**			
Total Storage Volume Required, from Volume Balance Calcs (cf)		**N/A**			
Residual Layer Depth (in)	SD	12	1.00		
Top of Liner, surface area, acres	SS-SD	0.35		89.0	89.0

7/10/07
Rev. 2/19/24

SUNRISE DAIRY AWMS
SETTLING POND 3
VOLUME CALCULATIONS

Elevation		Area, square feet
85	(POND BOTTOM)	25,168
86	(TOP OF RESIDUAL VOLUME)	27,448
87		29,800
88		32,224
89		34,720
90		41,080
91		43,792
92		46,576
92.9	(EVAPORATION MIDPOINT)	49,146
93		49,432
94		52,360
95		55,360
96		58,432
97		61,576
98		64,792
99		68,080
99.8	(MAXIMUM OPERATING LEVEL)	70,768
100		71,440
100.3	(TOP OF 25 YEAR, 24 HOUR STORM)	72,470
101		74,872
102		78,376
103		81,952
104		85,600
105	(TOP OF BERM)	89,320

	Volume of Interval, cubic feet
Pond Bottom	
	26,308
Top of Residual Volume	
	261,703
Evaporation Midpoint	
	411,744
Maximum Operating Level	
	35,807
Top of 25 year / 24 hour Storm Volume	
	379,594
Top of Berm (berm tops drain to outside)	

24.55	Annual Precipitation, inches
4.42	25 year, 24 hour Storm, inches
33	Annual Evaporation, inches

25 year / 24 hour Storm Volume, cubic feet	32,900
Annual Precipitation Volume, cubic feet	182,734
Annual Evaporation Volume, cubic feet	128,084
Net Storage Available, cubic feet	618,797

Dakota Environmental Consultants
PO Box 636, Huron SD 57350 (605) 352-5610

SUNRISE DAIRY AWMS
POND 1 VOLUME CALCULATIONS

POND DESIGN VOLUME AND ELEVATION SUMMARY

DESCRIPTION	EQN.		DEPTH (FT)	ELEV.	ACTUAL DESIGN USED
Existing Grade	G			105.00	
Inside Top of Berm Width (ft)	W	195			
Inside Width Slope, horizontal feet per foot drop	SW	3			
Inside Top of Berm Length (ft)	L	440			
Inside Length Slope, horizontal feet per foot drop	SL	3			
Constructed Top of Berm, including settlement	E+S			105.00	105.0
Settlement, % of embankment height	S=%(E-G)	0%	0.00		
Reference Elevation, operational top of berm (acres & elev. - ft.)	E	1.97		105.00	
Freeboard (in)	F	56.4	4.70		
Surface Area at Top of 24hr/25yr storm (acres/elev)	AS=E-F	1.58		100.30	
25yr/24hr Rainfall (in)	R	4.42			
Surface Area at Inside Top of Berm (ac)	OB	1.97			
Volume of 25yr/24hr Rainfall (cf)	VR=R*OB	42,365			
Volume Provided for 25yr/24hr Rainfall (cf)	avg(AS,O)*(AS-O)	42,589	0.63		
Maximum Surface Area and Operating Level (acres/elev)	O=E-F-R	1.53		99.67	99.7
Mean Annual Rainfall (in)	MAR	24.55			
Direct Mean Annual Rainfall within berms (cf)	DM=OB*MAR	175,533			
Mean Annual Lake Evaporation (in)	ME	33			
Evaporation Midpoint (elev)				92.84	
Surface Area at Evaporation Midpoint (ac)	ESA	1.03			
Net Evaporation at Midpoint (cf)	NE=ME*ESA	123,142			
Net Moisture used for design (evap[-] or rain[+]) (cf)	M	52,391	0.81		
Apparent Operation Level considering Net Moisture adj.	A=O-M	1.46		98.86	
Volume Provided for Net Moisture (cf)	avg(O,A)*(O-A)	52,763			
Waste Storage Depth (ft) excluding residual depth	D	13.67			
Surface area at top of residual layer (acres/elev)	SS=O-D	0.61		86.00	
Net Storage Depth provided	D-M	12.9	12.9		
Total Storage Volume from Net Storage Depth (cf)		**562,425**			
Residual Layer Depth (in)	SD	12	1.00		
Top of Liner, surface area, acres	SS-SD	0.55		85.00	85.0

SUNRISE DAIRY AWMS
POND 2B AS-BUILT VOLUME CALCULATIONS

POND DESIGN VOLUME AND ELEVATION SUMMARY

DESCRIPTION	EQN.		DEPTH (FT)	ELEV.	ACTUAL DESIGN USED
Existing Grade	G			103.00	
Inside Top of Berm Width (ft, @ el. 105.0)	W	295			
Inside Width Slope, horizontal feet per foot drop	SW	3			
Inside Top of Berm Length (ft, @ el. 105.0)	L	595			
Inside Length Slope, horizontal feet per foot drop	SL	3			
Constructed Top of Berm, including settlement	E+S			106.00	106.0
Settlement, % of embankment height	S=%(E-G)	0%	0.00		
Reference Elevation, operational top of berm (acres & elev. - ft.)	E	4.03		106.00	
Freeboard (in)	F	68.4	5.70		
Surface Area at Top of 24hr/25yr storm (acres/elev)	AS=E-F	3.36		100.30	
25yr/24hr Rainfall (in)	R	4.42			
Surface Area at Inside Top of Berm, incl. contributing area (ac)	OB	4.34			
Volume of 25yr/24hr Rainfall, (cf)	VR=R*OB	69,561			
Volume Provided for 25yr/24hr Rainfall (cf)	avg(AS,O)*(AS-O)	91,168	0.63		
Maximum Surface Area and Operating Level (acres/elev)	O=E-F-R	3.29		99.67	99.7
Mean Annual Rainfall (in)	MAR	24.55			
Direct Mean Annual Rainfall within berms (cf)	DM=OB*MAR	386,365			
Mean Annual Lake Evaporation (in)	ME	33			
Evaporation Midpoint (elev)				89.34	
Surface Area at Evaporation Midpoint (ac)	ESA	2.22			
Net Evaporation at Midpoint (cf)	NE=ME*ESA	265,463			
Net Moisture used for design (evap[-] or rain[+]) (cf)	M	120,902	0.86		
Apparent Operation Level considering Net Moisture adj.	A=O-M	3.19		98.81	
Volume Provided for Net Moisture (cf)	avg(O,A)*(O-A)	121,327			
Waste Storage Depth (ft) excluding residual depth	D	20.67			
Surface area at top of residual layer (acres/elev)	SS=O-D	1.32		79.00	
Net Storage Depth provided	D-M	19.8	19.8		
Total Storage Volume from Net Storage Depth (cf)		**1,888,868**			
Residual Layer Depth (in)	SD	12	1.00		
Top of Liner, surface area, acres	SS-SD	1.24		78.00	78.0

Dakota Environmental, Inc.
P.O. Box 636, 1122 21st Street SW Huron, SD 57350 605-352-5610 fax 605-352-0951

SUNRISE DAIRY AWMS
POND 2A VOLUME CALCULATIONS

POND DESIGN VOLUME AND ELEVATION SUMMARY

DESCRIPTION	EQN.		DEPTH (FT)	ELEV.	ACTUAL DESIGN USED
Existing Grade	G			105.00	
Inside Top of Berm Width (ft, @ el. 105.0)	W	285			
Inside Width Slope, horizontal feet per foot drop	SW	3			
Inside Top of Berm Length (ft, @ el. 105.0)	L	315			
Inside Length Slope, horizontal feet per foot drop	SL	3			
Constructed Top of Berm, including settlement	E+S			105.00	105.0
Settlement, % of embankment height	S=%(E-G)	0%	0.00		
Reference Elevation, operational top of berm (acres & elev. - ft.)	E	2.06		105.00	
Freeboard (in)	F	24.0	2.00		
Surface Area at Top of 24hr/25yr storm (acres/elev)	AS=E-F	1.90		103.00	
25yr/24hr Rainfall (in)	R	4.42			
Surface Area at Inside Top of Berm (ac)*	OB	2.16			
Volume of 25yr/24hr Rainfall, including calf pad (cf)	VR=R*OB	66,077			
Volume Provided for 25yr/24hr Rainfall (cf)	avg(AS,O)*(AS-O)	66,678	0.82		
Maximum Surface Area and Operating Level (acres/elev)	O=E-F-R	1.83		102.18	102.2
Mean Annual Rainfall (in)	MAR	24.55			
Direct Mean Annual Rainfall within berms (cf)	DM=OB*MAR	192,755			
Mean Annual Lake Evaporation (in)	ME	33			
Evaporation Midpoint (elev)				92.59	
Surface Area at Evaporation Midpoint (ac)	ESA	1.16			
Net Evaporation at Midpoint (cf)	NE=ME*ESA	139,269			
Net Moisture used for design (evap[-] or rain[+]) (cf)	M	53,486	0.68		
Apparent Operation Level considering Net Moisture adj.	A=O-M	1.78		101.50	
Volume Provided for Net Moisture (cf)	avg(O,A)*(O-A)	53,559			
Waste Storage Depth (ft) excluding residual depth	D	19.18			
Surface area at top of residual layer (acres/elev)	SS=O-D	0.64		83.00	
Net Storage Depth provided	D-M	18.5	18.5		
Total Storage Volume from Net Storage Depth (cf)		**938,766**			
Residual Layer Depth (in)	SD	12	1.00		
Top of Liner, surface area, acres	SS-SD	0.60		82.00	82.0

3/19/15
Rev. 2/19/24

SUNRISE DAIRY AWMS
REQUIRED POND CAPACITY CALCULATIONS

Storage Pond Capacity Balance

25 year / 24 hour storm volumes reporting to storage ponds		Volume, cf
Sand settling lane		2,087
Concrete sand storage pad		1,745
Clay lined sand storage pad		6,930
Proposed barn roof		31,373
	Total, cubic feet	**42,135**

Volumes reporting to storage ponds for storage		Volume, cf
Manure, washwater, and bedding volume from milking herd population		4,078,753
Manure from calf barn		27,375
Annual precipitation from sand settling lane		11,562
Annual precipitation from concrete sand storage pad		4,969
Annual precipitation from clay lined sand storage pad		8,180
Annual precipitation from proposed barn roof		89,326
	Total, cubic feet	**4,220,165**

Storage volumes provided	Volume, cf
Combined settling ponds 1 and 2	**235,520**
Settling pond 3	**618,797**
Storage pond 1	**562,425**
Storage pond 2A	**938,766**
Storage pond 2B	**1,888,868**
Total pond storage volume provided, cubic feet	**4,244,376**

	Balance	24,211

Dakota Environmental, Inc.
PO Box 636 Huron, SD 57350 (605)352-5610

APPENDIX D

NUTRIENT MANAGEMENT PLAN

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

INITIAL NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

SD-CPA-63A
Rev. 5/18

1. **Operator:** Sunrise Dairy, LLC 2. **County:** Hamlin 3. **Prepared By:** Austin Domeier (Centrol Crop Consulting) 4. **Date:** Feb. 2024

Total Nitrogen And Phosphorus Produced From Livestock Operation(s)

5.	6.	7.	8.	9.		10.		11.	12.	13.		14.	15.		16.	
Animal Type:	No. of animals	Avg. weight (lbs.)	Days of Confine-ment	N	P_2O_5	N retained		Total N available for application (lbs.)	Time of applic-ation	N Retained		Total N retained in field (lbs.)	3-Yr. Mineralization Rate		N	P_2O_5
				Total solid/liquid Manure as Excreted (lbs.)		Handling/Storage	%			Application Method	%		Manure Handling	%	Available for the crop (lbs.)	
Dairy	3,400	1,400	365	781,830	277,984	Liquid - earth storage	70	547,281	Spring/Fall/Summer	Injection	98	536,335	Anaerobic liquid	65	348,618	277,984
Dairy	300	200	365	9,855	3,504	Liquid - earth storage	70	6,899	Spring/Fall/Summer	Injection	98	6,761	Anaerobic liquid	65	4,394	3,504
Other Animals																
				Total Manure as Excreted:		**385,600**		**OR**	**140,744,000**	**lbs/year**		**Total lbs. of N and P2O5 available for the crop:**			353,012	281,488

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

SD-CPA-63B
Rev. 5/18

Field Information

Operator: Sunrise Dairy, LLC **County:** Hamlin **Date:** Feb. 2024

Line #	17. Field ID (Include maps to illustrate location) Name or Tract	Field #	18. Date added to Plan	19. Beginning acres in field	20. County	21. Soil map unit symbol	22. Field Location: (1/4 Section, Township, Range)	23. Predicted soil loss - Wind/Water (T/ac/yr)	24. Control of Land	25. 100' Vegetated Buffer	Excluded acres	26. Irrigated	27. Winter Application	28. No-Till	29. Current Soil Test Levels: N lb/ac 0-2'	N lb/ac 2-4'	Phosphorus (ppm) 0-6"	Phosphorus (ppm) P Test	K (ppm)	Organic Matter	Soil PH	Electric Conductivity (EC) Surface	Electric Conductivity (EC) Sub-surface	Soil Sample Date
1	1		Dec.2020	310.6	Hamlin	VbA	NW,NE,SW Sec. 36 ,T 115 ,R 51	0.3	Leased		22.0						5	Olsen						10/10/19
2	2		Dec.2020	80.7	Hamlin	VbA	NW 1/4 Sec. 36 ,T 115 ,R 51	0.6	Leased		5.5						11	Olsen						10/30/20
3	3		9/8/23	250.2	Hamlin	VbB	N 1/2 Sec. 35 ,T 115 ,R 51	0.9	Leased		35.8						16	Olsen						08/31/23
4	4		9/8/23	589.9	Deuel	VtB	Full Sec. 31 ,T 115 ,R 50	1.0	Leased		11.1						18	Olsen						08/31/23
5	5		Dec.2020	263.4	Hamlin	VbB	S 1/2 Sec. 25 ,T 115 ,R 51	0.6	Leased		39.0						31	Olsen						10/30/20
6	6		Dec.2020	235.4	Hamlin	VbB	S 1/2 Sec. 23 ,T 115 ,R 51	0.9	Leased		31.0						8	Olsen						09/25/20
7	7		Dec.2020	176.8	Hamlin	VbB	S 1/2 Sec. 24 ,T 115 ,R 51	0.9	Leased		32.0						14	Olsen						09/25/20
8	8		Dec.2020	29.5	Hamlin	VbB	NW 1/4 Sec. 26 ,T 115 ,R 51	0.9	Leased		7.0						10	Olsen						10/30/20
9							Sec. ,T ,R																	
10	10		Dec.2020	213.1	Hamlin	VbB	N 1/2 Sec. 25 ,T 115 ,R 51	0.6	Leased		26.0						8	Olsen						04/29/20
11							Sec. ,T ,R																	
12							Sec. ,T ,R																	
13	13		Dec.2020	275.8	Hamlin	VbB	W 1/2 Sec. 3 ,T 114 ,R 51	0.3	Leased		40.0		X				7	Olsen						10/30/20
14							Sec. ,T ,R																	
15							Sec. ,T ,R																	
16							Sec. ,T ,R																	
17							Sec. ,T ,R																	
18	18		Dec.2020	75.9	Deuel	VtB	SW 1/4 Sec. 33 ,T 115 ,R 50	1.0	Leased		5.5						12	Olsen						10/30/20
19	19		Dec.2020	68.2	Deuel	VtB	SW 1/4 Sec. 33 ,T 115 ,R 50	1.0	Leased		12.0						13	Olsen						10/30/20
20	20		Dec.2020	214.7	Deuel	VtB	W 1/2 Sec. 5 ,T 114 ,R 50	0.1	Leased		38.0		X				27	Olsen						10/30/20
21	21		Dec.2020	98.9	Deuel	VtB	SE 1/4 Sec. 34 ,T 115 ,R 50	0.5	Leased		6.0						27	Olsen						10/30/20
22	22		Dec.2020	134.1	Deuel	VtB	NW 1/4 Sec. 29 ,T 115 ,R 50	1.0	Leased		7.0						25	Olsen						10/30/20
23							Sec. ,T ,R																	
24	24		Dec.2020	135.1	Deuel	VrA	NE 1/4 Sec. 29 ,T 115 ,R 50	0.3	Leased		16.0						24	Olsen						10/30/20
25							Sec. ,T ,R																	
26	26		Dec.2020	77.1	Hamlin	VbB	SE 1/4 Sec. 36 ,T 115 ,R 51	0.6	Leased		6.5						8	Olsen						10/30/20
27	27		Dec.2020	144.6	Deuel	VtB	SW 1/4 Sec. 32 ,T 115 ,R 50	0.5	Leased		20.0						44	Olsen						10/30/20
28	28		Dec.2020	65.0	Hamlin	VbB	SE 1/4 Sec. 36 ,T 115 ,R 51	0.6	Leased		15.5						13	Olsen						10/30/20
29	29		Dec.2020	130.5	Hamlin	VbA	NE 1/4 Sec. 26 ,T 115 ,R 51	0.6	Leased		0.5						16	Olsen						09/24/20
30							Sec. ,T ,R																	
31	31		Dec.2020	184.3	Hamlin	VbB	N 1/2 Sec. 1 ,T 114 ,R 51	0.6	Leased		14.0						12	Olsen						10/30/20

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

SD-CPA-63B
Rev. 5/18

Field Information

Operator: Sunrise Dairy, LLC **County:** Hamlin **Date:** Feb. 2024

Line #	17. Field ID (Include maps to illustrate location) Name or Tract	Field #	18. Date added to Plan	19. Beginning acres in field	20. County	21. Soil map unit symbol	22. Field Location: (1/4 Section, Township, Range)						23. Predicted soil loss - Wind/Water (T/ac/yr)	24. Control of Land	25. 100' Vegetated Buffer	25. Excluded acres	26. Irrigated	27. Winter Application	28. No-Till	29. Current Soil Test Levels: N lb/ac 0-2'	N lb/ac 2-4'	Phosphorus (ppm) 0-6"	Phosphorus (ppm) P Test	K (ppm)	Organic Matter	Soil PH	Electric Conductivity (EC) Surface	Electric Conductivity (EC) Sub-surface	Soil Sample Date
32	32		Dec.2020	95.3	Deuel	VtB	NW 1/4	Sec.	30	T	115	R 50	0.6	Leased		10.5						9	Olsen						10/30/20
33	33		Dec.2020	153.2	Deuel	VtB	W 1/2	Sec.	4	T	114	R 50	0.5	Leased		25.0						48	Olsen						10/02/20
34	34		Dec.2020	170.0	Deuel	VtB	E 1/2	Sec.	33	T	115	R 50	1.0	Leased		28.0						11	Olsen						09/28/20
35	35		Dec.2020	191.4	Deuel	KrA	E 1/2	Sec.	27	T	115	R 50	0.2	Leased		20.0						25	Olsen						10/30/20
36	36		Dec.2020	137.6	Deuel	KrA	SW 1/4	Sec.	26	T	115	R 50	0.2	Leased		2.0						26	Olsen						10/30/20
37								Sec.		T		R																	
38								Sec.		T		R																	
39								Sec.		T		R																	
40								Sec.		T		R																	
41								Sec.		T		R																	
42								Sec.		T		R																	
43								Sec.		T		R																	
44								Sec.		T		R																	
45								Sec.		T		R																	
46								Sec.		T		R																	
47								Sec.		T		R																	
48								Sec.		T		R																	
49								Sec.		T		R																	
50								Sec.		T		R																	
51								Sec.		T		R																	
52								Sec.		T		R																	
53								Sec.		T		R																	
54								Sec.		T		R																	
55								Sec.		T		R																	
56								Sec.		T		R																	
57								Sec.		T		R																	
58								Sec.		T		R																	
59								Sec.		T		R																	
60								Sec.		T		R																	
		Total:	4,501.1																									

Comments:

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

Estimated Nutrient Requirement

17. 30.

○ Actual or Yield Goal
● Yields indexed by soil productivity (Productivity Index)
○ County Average Yields (SD Agricultural Statistics Service)

Line #	Field ID (Include maps to illustrate location) Name or Tract	Field #	Previous Year Crop	PI Yield	Actual Yield	Year 1 Crop	PI Yield	Yield Goal	Year 2 Crop	PI Yield	Yield Goal	Year 3 Crop	PI Yield	Yield Goal	Year 4 Crop	PI Yield	Yield Goal	Year 5 Crop	PI Yield	Yield Goal
1	1		Corn (bu)	194		Corn (bu)	194		Corn (bu)	194		Corn (bu)	194		Corn (bu)	194		Corn (bu)	194	
2	2		Corn (bu)	194		Soybean (bu)	56		Corn (bu)	194		Soybean (bu)	56		Corn (bu)	194		Soybean (bu)	56	
3	3		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52	
4	4		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51	
5	5		Wheat, Sp. (bu)	57		Corn (bu)	181		Soybean (bu)	52		Wheat, Sp. (bu)	57		Corn (bu)	181		Soybean (bu)	52	
6	6		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52	
7	7		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181	
8	8		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181		Soybean (bu)	52		Corn (bu)	181	
9																				
10	10		Corn (bu)	181		Soybean (bu)	52		Wheat, Sp. (bu)	57		Corn (bu)	181		Soybean (bu)	52		Wheat, Sp. (bu)	57	
11																				
12																				
13	13		Alf (T) >1 plant/sf	4		Alf (T) >1 plant/sf	4		Alf (T) >1 plant/sf	4		Alf (T) >1 plant/sf	4		Alf (T) >1 plant/sf	4		Alf (T) >1 plant/sf	4	
14																				
15																				
16																				
17																				
18	18		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51	
19	19		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182	
20	20		Alf (T) >1 plant/sf	5		Alf (T) >1 plant/sf	5		Alf (T) >1 plant/sf	5		Alf (T) >1 plant/sf	5		Alf (T) >1 plant/sf	5		Alf (T) >1 plant/sf	5	
21	21		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182	
22	22		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51	
23																				
24	24		Corn (bu)	193		Corn (bu)	193		Corn (bu)	193		Corn (bu)	193		Corn (bu)	193		Corn (bu)	193	
25																				
26	26		Corn (bu)	181		Soybean (bu)	52		Wheat, Sp. (bu)	57		Corn (bu)	181		Soybean (bu)	52		Wheat, Sp. (bu)	57	
27	27		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182	
28	28		Corn (bu)	181		Soybean (bu)	52		Wheat, Sp. (bu)	57		Corn (bu)	181		Soybean (bu)	52		Wheat, Sp. (bu)	57	
29	29		Soybean (bu)	56		Corn (bu)	194		Soybean (bu)	56		Corn (bu)	194		Soybean (bu)	56		Corn (bu)	194	
30																				
31	31		Soybean (bu)	52		Corn (bu)	181		Wheat, Sp. (bu)	57		Soybean (bu)	52		Corn (bu)	181		Wheat, Sp. (bu)	57	

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

Estimated Nutrient Requirement

17. 30.

O Actual or Yield Goal
◉ Yields indexed by soil productivity (Productivity Index)
O County Average Yields (SD Agricultural Statistics Service)

Line #	Field ID (Include maps to illustrate location)		Previous Year			Year 1			Year 2			Year 3			Year 4			Year 5		
	Name or Tract	Field #	Crop	PI Yield	Actual Yield	Crop	PI Yield	Yield Goal	Crop	PI Yield	Yield Goal	Crop	PI Yield	Yield Goal	Crop	PI Yield	Yield Goal	Crop	PI Yield	Yield Goal
32	32		Soybean (bu)	51		Corn (bu)	182		Wheat, Sp. (bu)	73		Soybean (bu)	51		Corn (bu)	182		Wheat, Sp. (bu)	73	
33	33		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182		Corn (bu)	182	
34	34		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182		Soybean (bu)	51		Corn (bu)	182	
35	35		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197	
36	36		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197		Corn (bu)	197	
37																				
38																				
39																				
40																				
41																				
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UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NUTRIENT MANAGEMENT PLAN
FOR
SOUTH DAKOTA ANIMAL FEEDING OPERATIONS

SD-CPA-63B
Rev. 5/18

Part 3: Planned Nutrient Application

Date: Feb. 2024 **Operator:** **County:** Hamlin **Date:** Feb. 2024

Line #	17. Field ID (Include maps to illustrate location) Name or Tract	Field #	Alternative crops for years 1 through 5	31. Initial Nutrient Mgt. Plan - N based fields (acres)	32. Nutrient Recommendation - *SDSU Extension Service EC-750* N	P_2O_5	K_2O	33. Manure application based on:	34. Phosphorus Risk Assessment	35. Nitrogen Risk Assessment	36. Nutrients Applied: Commercial lbs/acre N	P_2O_5	K_2O	Manure lbs/acre N	P_2O_5	K_2O	Total lbs/acre N	P_2O_5	K_2O	37. Estimated years to reapplication based on P_2O_5 rate
1	1			288.6		93		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
2	2			75.2		1		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
3	3			214.4		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
4	4			578.8		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
5	5			224.4		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
6	6			204.4		22		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
7	7			144.8		15		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
8	8			22.5		47		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
9											0	0	0	0	0	0	0	0	0	
10	10			187.1		22		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
11											0	0	0	0	0	0	0	0	0	
12											0	0	0	0	0	0	0	0	0	
13	13			235.8		42		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
14											0	0	0	0	0	0	0	0	0	
15											0	0	0	0	0	0	0	0	0	
16											0	0	0	0	0	0	0	0	0	
17											0	0	0	0	0	0	0	0	0	
18	18			70.4		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
19	19			56.2		23		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
20	20			176.7		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
21	21			92.9		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
22	22			127.1		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
23											0	0	0	0	0	0	0	0	0	
24	24			119.1		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
25											0	0	0	0	0	0	0	0	0	
26	26			70.6		22		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
27	27			124.6		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
28	28			49.5		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
29	29			130.0		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
30											0	0	0	0	0	0	0	0	0	
31	31			170.3		31		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A

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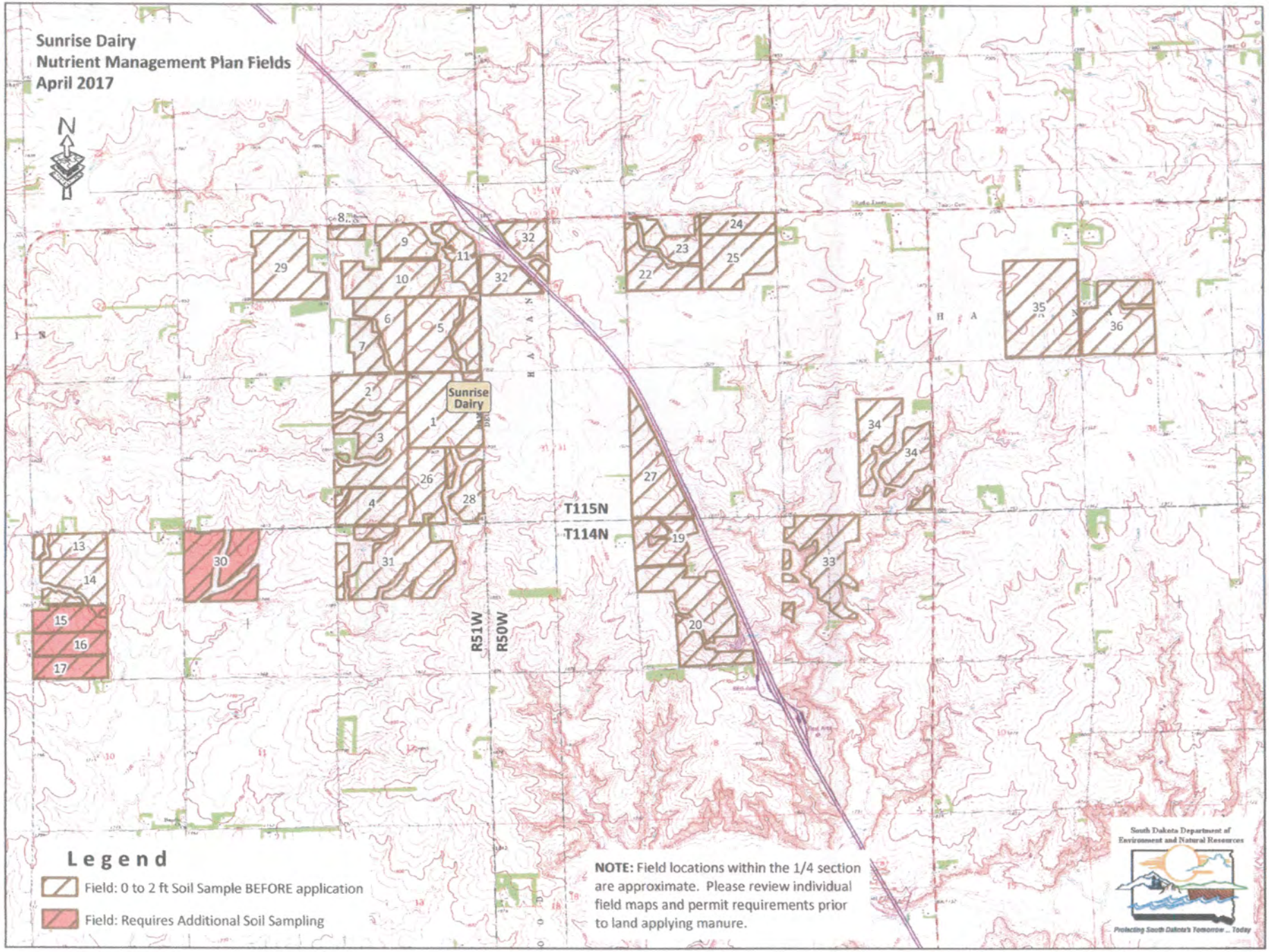
Line #	17. Field ID (Include maps to illustrate location) Name or Tract	Field #	Alternative crops for years 1 through 5	31. Initial Nutrient Mgt. Plan - N based fields (acres)	32. Nutrient Recommendation - *SDSU Extension Service EC-750* N	P_2O_5	K_2O	33. Manure application based on:	34. Phosphorus Risk Assessment	35. Nitrogen Risk Assessment	36. Nutrients Applied: Commercial lbs/acre N	P_2O_5	K_2O	Manure lbs/acre N	P_2O_5	K_2O	Total lbs/acre N	P_2O_5	K_2O	37. Estimated years to reapplication based on P_2O_5 rate
32	32			84.8		55		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
33	33			128.2		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
34	34			142.0		39		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
35	35			171.4		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
36	36			135.6		0		Nitrogen need	Low		0	0	0	0	0	0	0	0	0	N/A
37											0	0	0	0	0	0	0	0	0	
38											0	0	0	0	0	0	0	0	0	
39											0	0	0	0	0	0	0	0	0	
40											0	0	0	0	0	0	0	0	0	
41											0	0	0	0	0	0	0	0	0	
42											0	0	0	0	0	0	0	0	0	
43											0	0	0	0	0	0	0	0	0	
44											0	0	0	0	0	0	0	0	0	
45											0	0	0	0	0	0	0	0	0	
46											0	0	0	0	0	0	0	0	0	
47											0	0	0	0	0	0	0	0	0	
48											0	0	0	0	0	0	0	0	0	
49											0	0	0	0	0	0	0	0	0	
50											0	0	0	0	0	0	0	0	0	
51											0	0	0	0	0	0	0	0	0	
52											0	0	0	0	0	0	0	0	0	
53											0	0	0	0	0	0	0	0	0	
54											0	0	0	0	0	0	0	0	0	
55											0	0	0	0	0	0	0	0	0	
56											0	0	0	0	0	0	0	0	0	
57											0	0	0	0	0	0	0	0	0	
58											0	0	0	0	0	0	0	0	0	
59											0	0	0	0	0	0	0	0	0	
60											0	0	0	0	0	0	0	0	0	
				4,025.2	N	P_2O_5														

Total lbs of N and P2O5 available for crops: 332,505 265,136
Total lbs of N and P2O5 required by fields: 807,676 218,251

Comments:

Adequate acres are available based on Nitrogen analysis
However, P2O5 is in excess of removal. At this rate, it will take more than 40 years to build all listed fields up to 50 ppm P (Olsen).


Sunrise Dairy
Nutrient Management Plan Fields
April 2017
N
Sunrise Dairy
T115N
T114N
R51W
R50W
HAVANA
Legend
Field: 0 to 2 ft Soil Sample BEFORE application
Field: Requires Additional Soil Sampling
NOTE: Field locations within the 1/4 section are approximate. Please review individual field maps and permit requirements prior to land applying manure.
South Dakota Department of Environment and Natural Resources
Protecting South Dakota's Tomorrow ... Today

APPENDIX E

MANURE MANAGEMENT & OPERATION PLAN

OPERATION AND MAINTENANCE MANUAL

for the

SUNRISE DAIRY, LLC

ANIMAL WASTE MANAGEMENT SYSTEM

HAMLIN COUNTY, SOUTH DAKOTA

April 7, 2020

DEC Project No. 23015

Producer:	Sietse & Aafke Andringa
Address:	18313 466th Avenue Clear Lake, SD 57226
Phone:	(605) 868-0589
Project Location:	NE ¼ Section 36, T115N R51W, Hamlin County, SD

The Owner acknowledges responsibility for the proper operation and maintenance of the animal waste management system. Although the design is based on the best available technical knowledge, it must be recognized that any system creates some risks, and therefore needs to be properly operated and maintained, including periodic inspection. In addition, maximum efficiency cannot be obtained unless the system is properly operated and maintained so that it will function safely in its intended manner. Recognizing this, this Manual has been prepared for operating and maintaining the system. The following items list the anticipated major and uncommon items of Operation and Maintenance for this system. It is recommended that the following list be reviewed and be used as a checklist to ensure major elements of operation and maintenance are consistently being observed.

I. Operation

A. Inspection:

_____1. Entire system weekly.

_____2. Land application sites daily when application of manure is occurring.

_____3. Fences and safety signs.

_____4. Depth of waste.

_____5. Calf barn pit for proper functioning of drain to pond.

_____6. Inspect all components for signs of damage or leakage.

_____7. Inspect earthwork for signs of seepage, rodent damage, settlement, misalignment, excessive vegetative growth, or erosion.

_____8. Document all inspections on the form included with this manual, including all pertinent information.

_____9. If a discharge from the manure management system or land application site is found to have occurred, the producer must report the discharge as soon as possible, but no later than twenty-four hours after the discharge was discovered. The discharge must be reported to the State of South Dakota at (605) 773-3351, or (605) 773-3231 after normal business hours.

B. Daily Operation:

_____1. All pond liner bottoms shall be kept submerged a minimum of one foot at all times. If there is less than one foot of water, additional water will need to be added to prevent the clay from shrinking and cracking. If cracking occurs, contact Dakota Environmental to evaluate the liner.

_____2. Divert stormwater and runoff from entering buildings, transfer structures, and the storage ponds.

_____3. Piled feed should be kept covered to the maximum extent practical in order to prevent contact with stormwater. The open end of the pile should be kept as clean as possible so that no more material than absolutely necessary is exposed. Good housekeeping practices shall be employed at the loading face of any pile to prevent loose material from piling up around the open face of the covered pile and becoming exposed.

_____4. Confine travel of vehicles and livestock to designated areas to prevent erosion and enhance vegetation.

_____5. Maintain grades around all components to assure positive surface drainage away from the structures in all directions. Fill any settled areas which may collect water.

_____6. Sand should be removed periodically from the settling ponds to maximize settling potential from the waste stream. Equipment should not enter any earthen lined area to do so. Sand may be removed using an excavator parked on the berm, as long as an adequate reach is available. The settling ponds should not be cleaned all the way to the top of the liner in order to prevent potential damage.

_____7. Settled solids should not be allowed to accumulate to excess near the inlet pipe outlets in order to keep the settling ponds functioning properly.

_____8. Place or remove planks in the level control structures as necessary to maintain the optimum levels in the settling ponds.

_____9. If the transfer pipe between Ponds 1 and 2 becomes plugged, it should be cleared as soon as possible. The emergency spillway is not intended to act as the primary transfer structure between the ponds.

_____10. The pit in the calf barn must be monitored for proper drainage of the pit to the pond. If solids accumulation in the pit impedes the operation of the drain pipe, the contents of the pit must be agitated while adding clean water to dilute the solids and restore drainage. Solids buildup may also be removed with a suction device after agitation to avoid any risk of plugging the drain pipe.

_____11. Land apply from the pond system as needed to maintain adequate freeboard and storage capacity. The liquid levels are not to exceed the maximum operating depth markers.

_____12. The contents of the storage ponds should be agitated during removal of wastes to prevent buildup of solids and sludge.

_____13. Prepare an annual nutrient management plan based on actual analysis of nutrient levels in both the manure and the soil.

_____14. As needed, apply wastes as determined by nutrients tests and the nutrient management plan. Whenever possible, apply downwind from any residences. Avoid applying on calm, humid days, since these conditions restrict the dispersion and dilution of odors. Application on weekends or holidays, when people in the area are more likely to be outdoors, should also be avoided.

_____15. Do not apply manure or process wastewater on saturated, snow covered, or frozen soil unless planned for in the initial nutrient management plan. The provisions of the initial plan, as well as all requirements of section 1.4.4.1.t of the General Permit must be followed in these circumstances.

_____16. Do not apply waste material immediately after rain or within twelve hours of forecasted rain unless it can be immediately incorporated into the soil.

_____17. Do not apply waste (solids and liquids) at a rate which exceeds the annual nitrogen needs of the crop or at a rate that produces runoff. No more than two inches should be applied at any one time.

_____18. Keep records of the fields, days, temperature and wind direction when manure was applied using the form supplied with this manual.

_____19. All provisions of the General Water Pollution Control Permits for Concentrated Animal Feeding Operations must be followed. The producer should be familiar with these permits in their entirety.

_____20. For safety, cover all openings to pump pits and similar structures when not in use. Be certain the covers provide ventilation as explosive, poisonous, and suffocating gases are produced. This applies to all enclosed areas where manure is present.

_____21. Extreme care must be exercised before entering any enclosure, such as pumping stations, for maintenance. This should include operations by experienced and knowledgeable workers **in pairs**, making use of appropriate safety equipment, such as a harness, forced ventilation, or the use of an oxygen mask. All operators should familiarize themselves with gas problems, special wiring needs and ventilation needs. ***"NO SMOKING"*** or similar signs to warn against ignition hazards should be posted to warn persons of explosion danger at any pump pits or other enclosed, poorly ventilated areas in which combustible gases may accumulate.

II. Maintenance

_____1. Repair any earth work, or erosion thereof, to original grade. Grading must maintain a slope away from the buildings and storage pond in all directions to drain runoff.

_____2. Repair and revegetate any areas of significant erosion.

_____3. Repair any damaged system components.

_____4. Seal any areas where seepage is noted. Cracks in concrete pit walls or floors must be sealed with a suitable high modulus sealant.

_____5. Repair fences, covers, and safety signs, etc. to original specifications if damaged.

_____6. Remove and dispose of trash and debris that will affect the aesthetics or functioning of the system.

_____7. Remove any trees growing adjacent to the pits, buildings, or ponds to prevent root damage to the structures.

_____8. Apply herbicide as needed to retard growth of vegetation on the inside of the pond embankments so the integrity of the clay is not disturbed.

I have reviewed the above Operation and Maintenance Manual for my Waste Management System and agree to provide the necessary resources to properly implement its provisions.

Operator 7-8-20 Date

SUNRISE DAIRY AWMS
MANURE CONTAINMENT INSPECTION
OPERATION AND MAINTENANCE RECORD

DATE	TIME	DAYS SINCE LAST INSPECTED	MANURE LEVEL ft.	APPROX. REMAINING FREEBOARD ft.	VISIBLE DISCHARGE OCCURRING OR HAS OCCURRED? yes/no	OTHER OBSERVATIONS OR COMMENTS	INSPECTOR

Permit requires documentation of weekly inspection be maintained. Best if performed at same time of day each time. Items to inspect include:

1 Presence of leaks, discharges, earth or building movement/settlement, or potential for same to occur
2 Condition of any fencing, warning signs, or barricades
3 Observe visible concrete for signs of deterioration, cracking, or spalling
4 Woody plant growth, erosion, or animal burrows near building
5 **LANDSPREADING AREAS MUST BE INSPECTED DAILY WHEN LAND APPLICATION OCCURRING - USE SEPARATE FORM**
6 Releases and discharges must be reported within 24 hours of discovery to 605-773-3351, or to 605-773-3231 after normal business hours

DAKOTA ENVIRONMENTAL, INC.
HURON, SD
1-800-888-0423

SUNRISE DAIRY AWMS
LAND APPLICATION INSPECTION
OPERATION AND MAINTENANCE RECORD

DATE	TIME	MANURE APPLICATION LOCATION					RATE MANURE IS BEING APPLIED TO THE SITE?	VISIBLE DISCHARGE OCCURRING OR HAS OCCURRED ?	OBSERVATIONS	INSPECTED BY
		1/4	SECTION	TWP	RANGE	COUNTY	gal/acre	YES/NO	(weather conditions, equipment used, etc.)	

Permit requires documentation of daily inspection of manure application sites to be maintained. Items to inspect include:

1 Presence of discharges of manure to wetlands, streams, or off site.
2 Incorporation of freshly applied manure within 5 days. (except on no-till and pasture land)
3 Maintenance of buffer zones around wells, wetlands, streams, and property lines.
4 Application conditions (too wet, frozen ground, etc.)

Releases and discharges must be reported within 24 hours of discovery to 605-773-3351, or to 605-773-3231 after normal business hours

APPENDIX F

MANAGEMENT PLAN FOR FLY AND ODOR CONTROL

MANAGEMENT PLAN FOR FLY AND ODOR CONTROL

for the

SUNRISE DAIRY

ANIMAL WASTE MANAGEMENT SYSTEM

HAMLIN COUNTY, SOUTH DAKOTA

April 18, 2013

Revised February 19, 2024

DEC Project No. 23015

Producer:	Sietse & Aafke Andringa
Address:	18313 466th Avenue Castlewood, SD 57223
Phone:	(605) 868-0589
Project Location:	NE ¼ Section 36, T115N R51W, Hamlin County, SD

This plan is provided to describe the Best Management Practices (BMPs) that currently are and will continue to be implemented to minimize any nuisance created by flies and odors from the existing and proposed dairy facility. The BMPs described have been utilized at this and other facilities and have been reported to be useful. This plan deals with odor and fly control in the three most vital phases, which are the manure storage areas, the land application of manure, and the disposal of dead animals.

I. Manure Storage Areas

All waste produced on the site is ultimately contained in earthen storage ponds. The cattle are housed in freestall type buildings from which manure is scraped to a sand bedding separation system before being discharged to the ponds. This is done on a daily basis. The ponds are designed in accordance with state law to provide adequate storage capacity as well as minimize odors as much as possible. The storage ponds often form a semi-solid crust consisting of buoyant manure solids residue, which serves to reduce odors by minimizing air contact with the raw manure.

The configuration of the buildings and manure collection system also reduces odors by removing manure from the housing areas as soon as possible. It is vital to the best interests of any dairy operation to keep the animals as clean and dry as possible, which assures that good housekeeping practices are maintained in the barn areas. The manure collection and transfer system does not contain manure for extended periods, as it is designed to transfer waste to the storage ponds as efficiently and quickly as possible. Washwater used in the process of cleaning the milking parlor and holding area also serves to dilute the raw manure, resulting in less odors as well.

The site is located with consideration to applicable zoning ordinances and permit requirements for confined animal feeding operations. These include specific separation distances from residences, churches, schools, businesses, and municipalities. These distances were established to prevent any nuisance to surrounding features from facilities of this type. Good ventilation of the buildings is provided, which is also in the best interests of the animal herd and operator.

Final disposal of the manure is by land application at rates that do not exceed the agronomic requirement of the crop to be grown and allow beneficial utilization of the manure nutrient content.

Since higher winds tend to disperse odors by agitating odors, windy days are when odors are usually noticed the least. On calm days, or days with light winds, odor is transported without being agitated. The location of the storage ponds on the south side of the barns, and at a lower elevation, provides some extent of agitation of airflow over the surface of the ponds.

For areas around the barns, pesticide, especially in powdered form, can also be used to control insects. The use of professional pest control services which utilize sprays or fogging to eliminate insects is also a common practice in the dairy industry. The operator currently sprays for flies on site on a weekly basis.

Rodent control will be aided by the fact that the configuration of the buildings and pits offer little shelter for these animals. Control of rodents is also in the best interests of the dairy for reasons of sanitation and biosecurity, which is thoroughly inspected on a regular basis by state officials. For areas around the building walls, solid poison can be used to control rodents and keep burrowing from occurring near the concrete. A professional control service is also utilized by the operator.

II. Manure Land Application

Guidelines set forth in the South Dakota General Water Pollution Control Permit for Concentrated Animal Feeding Operations strictly regulate the land application of manure. Details of these guidelines can be found in the Nutrient Management Plan for this facility. Many of these guidelines were written with the control of odors in mind. Facilities must have adequate manure storage capacity to store manure over the winter, as manure should not be applied to frozen ground. The existing ponds are sized to contain 365 days worth of manure and wastewater production from the expanded facility. Solid manure and bedding from the special needs portion of the facility will be stacked on a storage pad during the period of the year when immediate land application is not possible. This volume of manure will be a very small proportion of that produced by the entire herd, and is not expected to produce significant odors.

The ventilation of the barns will be reduced in the wintertime to minimize the amount of cold outside air into the barns resulting in greatly reduced odors at this time. Cold temperatures will accomplish insect control during this period as well.

Regardless of the type of manure, the times for manure land application should still be chosen carefully. Since higher winds tend to disperse odors faster, windy days are best. Days that are humid and calm, or have slight winds, should be avoided, as these conditions can result in the transport of odors over distances without dispersal. For the convenience of any neighbors, manure land application should be avoided on weekends, holidays, evenings, or any other times where people are likely to be involved in outdoor recreational or leisure activities. The Operation and Maintenance Manual for the facility outlines these best management practices (BMPs) for easy reference by the operator.

The General Permit requires liquid manure that is land applied to cropland (other than no-till) to be injected or incorporated immediately. In addition to greatly reducing the potential for surface water contamination, this practice serves to remove the source of odor by mixing it into the soil. This also will remove the source of attraction for flies and other insects. Equipment designed to inject or incorporate manure in this manner also keeps the manure totally contained between removal from the lagoon and incorporation by utilizing a pump and pipeline arrangement between the source and the field. Therefore, minimal odor will be produced during transport and land application, and the likelihood of spills will be greatly reduced. This method of application also results in much less wear of area roads.

In accordance with the Nutrient Management Plan, records must be kept regarding land application of manure. The date, time, location, wind direction, temperature, and amount of manure applied should be included whenever land application of manure takes place. These requirements were designed to eliminate over-application of manure and prevent runoff, excess odor, or other pollution by increasing the operator's awareness of proper land application practices.

III. Disposal of Dead Animals

Disposal of dead animals is not a major concern at this facility, since the herd is generally culled on a regular basis, with animals which are not producing as desired being sold and removed. In this way, death loss is minimized by removing animals which are past their prime before they become chronically ill. A rendering service is currently utilized to remove mortalities from the site, and will continue to be used. This method is one of several approved by the State Animal Industry Board for removal of carcasses, and offers the most sanitary option for the operator.

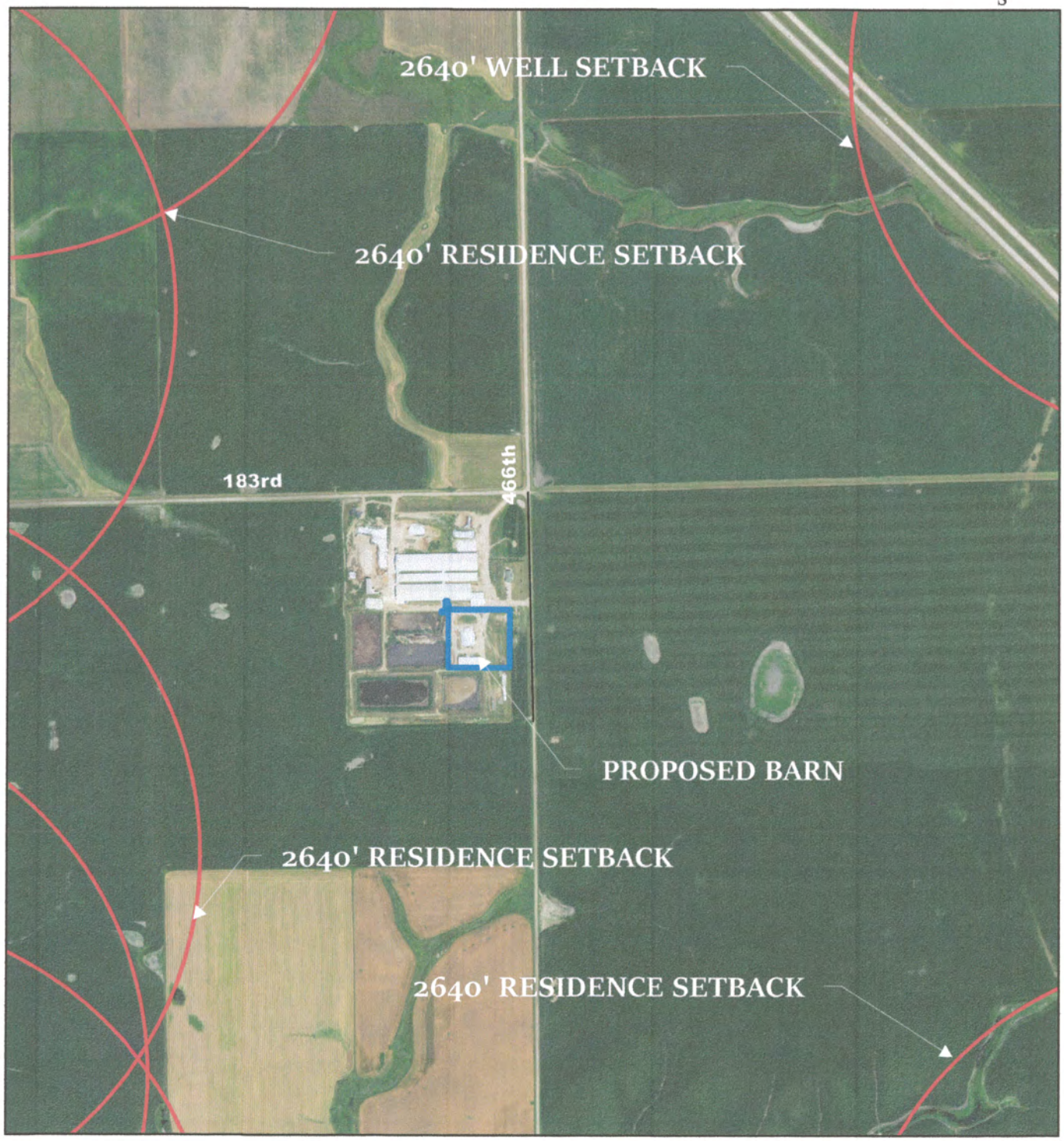
Summary

It is believed the Best Management Practices that have been described above have been helpful to minimize nuisances from odors and insects at this facility, and that similar results can be expected from the expanded facility. While some production of odor is inevitable, it is possible through concerted effort and careful attention to keep both the intensity and frequency of odors and insects at a level where area residents are not inconvenienced.

APPENDIX G

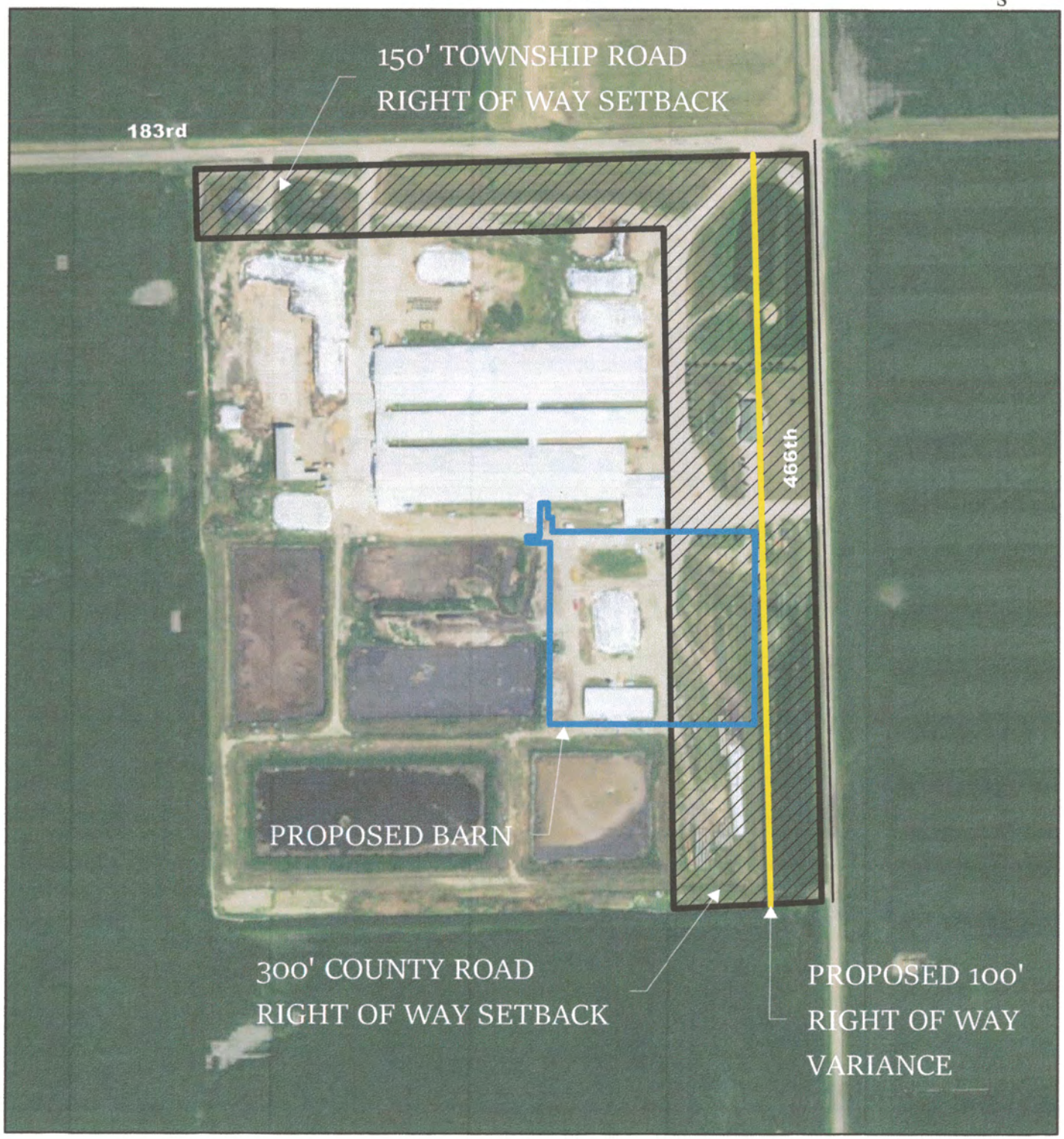
SETBACK MAP

Sunrise Dairy
SETBACK MAP



1 inch = 1,000 feet

Sunrise Dairy
SETBACK MAP



1 inch = 300 feet

APPENDIX H, I

GENERAL PERMIT FROM SD DENR,

REVIEW OF PLANS & SPECIFICATIONS & NUTRIENT MANAGEMENT PLAN BY SOUTH DAKOTA DENR

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

April 4, 2019

Sietse Andringa
Sunrise Dairy
18313 466th Avenue
Clear Lake, SD 57226-5351

RE: Sunrise Dairy Manure Management System
Revised Certificate of Compliance

Dear Mr. Andringa:

As you are aware, the department issues a Certificate of Compliance for manure management systems that have had plans and specifications approved and are constructed as designed. We have received amended Notice of Completion forms and are issuing you a revised Certificate of Compliance.

The revised Certificate of Compliance is for a 2,000-head dairy cattle operation consisting of 1,700-head of mature dairy cattle and 300 calves. The components included in the amended Notice of Completion form consist of the two robotic milking rooms in the north freestall barn. The certificate shall remain in place until such time you change or expand your operation. Should you decide to change or expand your operation, you need to obtain approval of plans and specifications for any alternations or modifications to your manure management system. The plans and specifications have to be approved by this department prior to construction. Failure to do so will invalidate this certificate.

Also, you have completed the requirements to obtain coverage under the 2003 general water pollution control permit for concentrated animal feeding operations **(permit number SDG-0100207)**. I am granting coverage under the 2003 permit for the two north robotic milking rooms. Please refer to this permit number in any future permit correspondence. You are required to operate in compliance with the terms and conditions of the permit.

Buffer zones are required around land application areas. Please review the buffer zone requirements on the land application maps included with the nutrient management plan in Appendix D of the enclosed permit prior to land applying manure.

The 2017 *General Water Pollution Control Permit for Concentrated Animal Feeding Operations* (general permit) has been reissued. Your operation is required to submit an application for coverage under the 2017 general permit by April 15, 2020. Please note that certain modifications to plans previously approved by DENR or new plans will require operations to submit a permit

application for coverage under the reissued 2017 permit. Information on the reissued general permit can be found at http://denr.sd.gov/ccdocs.aspx?CCID=CCID25 and http://denr.sd.gov/des/fp/fphome.aspx.

We would like to thank you for your cooperation in ensuring protection of our natural resources. The department encourages you to remain in compliance by properly operating and maintaining your system.

Sincerely,

Kent R. Woodmansey, P.E., Engineering Manager
Feedlot Permit Program
(605) 773-3351

cc: Brian Friedrichsen, P.E,, DEC Inc, Huron, SD
Hamlin County Commissioners
Luke Muller, F.D.A.L.G., Watertown, SD

DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES

JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182

denr.sd.gov

May 11, 2015

Sietse Andringa
Sunrise Dairy
18313 466th Avenue
Clear Lake, SD 57226-5351

Re: Sunrise Dairy Proposed Expansion
Plans and Specifications Review

Dear Mr. Andringa:

The Department of Environment and Natural Resources received four copies of the plans and specifications for the proposed expansion to your partially permitted manure management system on March 20, 2015. The existing manure management system is located in the Northeast ¼ of Section 36, Township 115 North, Range 51 West in Hamlin County, South Dakota. The department issued a Certificate of Compliance and permit coverage for a maximum of 1,750-head of dairy cattle on December 17, 2013.

Your approved manure management system is for a housed lot feeding a maximum of 1,750-head of dairy cattle consisting of 1,550-head of mature dairy cattle and 200 calves. Your system consists of existing and proposed components. The permitted components of your operation consist of piping, diversion dikes/channels, three freestall barns, a milk parlor, a feed storage area, a clay lined manure stacking area, a concrete sand settling lane, a concrete sand stacking pad, a calf hut area, calf barn, two settling ponds, two holding ponds, and 1.4 acres of drainage area. The manure stacking pad is designed for 270 days of solids storage. The pond system is designed for at least 270 days of liquid storage. The proposed components of your operation consist of a second milk parlor, a feed storage pad addition, and a third holding pond that have not been constructed.

The proposed expansion consists of the following:

- Increasing the maximum animal number from 1,550-head of mature dairy cattle and 200 calves to 3,000-head of mature dairy cattle and 300 calves;
- Constructing two additional freestall barns north of the existing barns and a barn addition onto the east side of the existing middle freestall barn;
- The existing flume and recycle line will be extended north to the new barns;
- The second milk parlor and previously approved holding pond will be constructed with the expansion; and
- With the increase in animals and construction of the third pond, the holding pond system will have at least 365 days of liquid storage capacity.

We have reviewed and hereby conditionally approve the revised plans and specifications for your project. This approval expires on May 11, 2017, unless construction of the proposed expansion has been started by that date. Requirements that you must implement are listed on the attached pages. Failure to implement the requirements on the following pages prior to operation of the manure management system will invalidate this approval.

Two copies of the approved revised plans and specifications are being retained for our files. If any deviations are required from the approved plans, those changes and all change orders must be approved by the department prior to construction. A complete set of as-built plans will be required if several major deviations result.

Upon completion of construction, the enclosed Notice of Completion must be returned to the department. **You cannot populate the proposed barns or use the proposed holding pond to store manure or wastewater until the department has received a Notice of Completion, conducted a satisfactory construction inspection, and issued a revised Certificate of Compliance and permit coverage. Test results for the clay liner in the proposed barns must be submitted with the Notice of Completion form.** Continued compliance is dependent upon you performing proper operation and maintenance activities. You will be liable for any noncompliance with applicable South Dakota environmental laws or regulations.

Our review is primarily to assure that the system meets the requirements of the general permit and does not cover items such as, quality of material, structural soundness, electrical, and mechanical design features. Approval of the plans and specifications does not in any way release the producer from the responsibility of ensuring that the project will be an operable facility when construction is completed.

For more information on this review and approval please see the attached pages of requirements. If you have any questions regarding the content of this letter, please feel free to contact Ben Myers, Feedlot Permit Program at (605) 773-3351. Thank you for your cooperation.

Sincerely,

Kent R. Woodmansey, PE, Engineering Manager
Feedlot Permit Program

Enclosures: Notice of Completion Form
Construction Schedule Postcard

cc: Brian Friedrichsen, PE, DEC, Huron, SD
Luke Muller, F.D.A.L.G., Watertown, SD
Hamlin County Commissioners

APPENDIX J

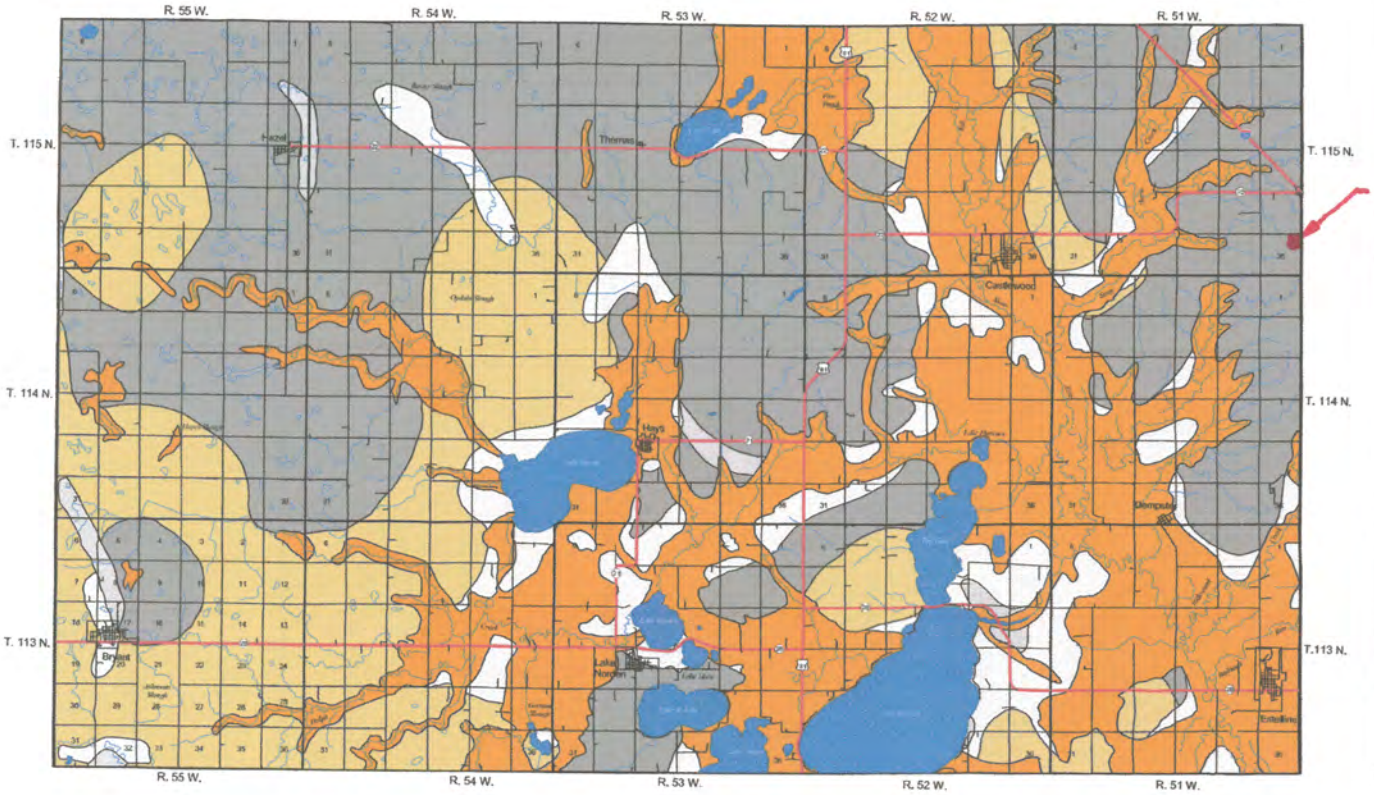
INFORMATION ON SOILS, SHALLOW AQUIFERS, DESIGNATED WELLHEAD PROTECTION AREA, & 100-YEAR FLOODPLAIN DESIGNATION

First Occurrence of Aquifer Materials in Hamlin County, South Dakota

Department of Environment and Natural Resources
Division of Financial and Technical Assistance
Geological Survey
Aquifer Materials Map 8
Ann R. Jensen, 2001

State of South Dakota
William J. Janklow, Governor

South Dakota Geological Survey
Derric L. Iles, State Geologist



Explanation

This map is intended for use as a tool to aid in identifying areas underlain by aquifer material. The aquifer materials shown on this map are categorized below. This map does not show individual aquifers. There may be more than one type of aquifer material present in an area. However, only the aquifer material that would be first encountered is shown. Within the boundaries of any given map unit, there may be localized areas where aquifer material is absent. The thickness and permeability of aquifer material may vary significantly. Also, no attempt was made to distinguish between saturated and unsaturated material. Therefore, not all of the areas defined on this map may be an aquifer. Site-specific information should always be examined when making land management or water development decisions.

First occurrence is generally less than or equal to 50 feet below land surface

- **Sand and Gravel:** First occurrence is generally at land surface. This area may include some alluvial till and clay along the rivers and streams.
- **Sand and Gravel:** First occurrence is generally below land surface. May not be uniform in depth and thickness and may be discontinuous in lateral extent.

First occurrence is generally greater than 50 feet and less than or equal to 100 feet below land surface

- **Sand and Gravel:** May not be uniform in depth and thickness and may be discontinuous in lateral extent

First occurrence is generally greater than 100 feet below land surface

- **Sand and Gravel:** May not be uniform in depth and thickness and may be discontinuous in lateral extent
- **Dakota Formation:** Consists of interbedded siltstone, sandstone, and shale

- Major highway
- Road
- Township boundary
- River or stream
- Lake
- Slough or intermittent lake

For township section numbering system, see T. 113 N., R. 55 W.

Index map of South Dakota showing the location of Hamlin County

Scale 1:100,000

0 1 2 3 4 5 6 Miles

0 1 2 3 4 5 6 Kilometers

This map was developed from lithologic logs and published reports. The major sources of information were:

Benson, D.R., and Gilbertson, J.P., 1967, *Geology and water resources of Deuel and Hamlin Counties, South Dakota; Part I: Geology*: South Dakota Geological Survey Bulletin 27, 41 p.

Kume, J., 1976, *Major aquifers in Deuel and Hamlin Counties, South Dakota*: South Dakota Geological Survey Information Pamphlet 11, 4 p.

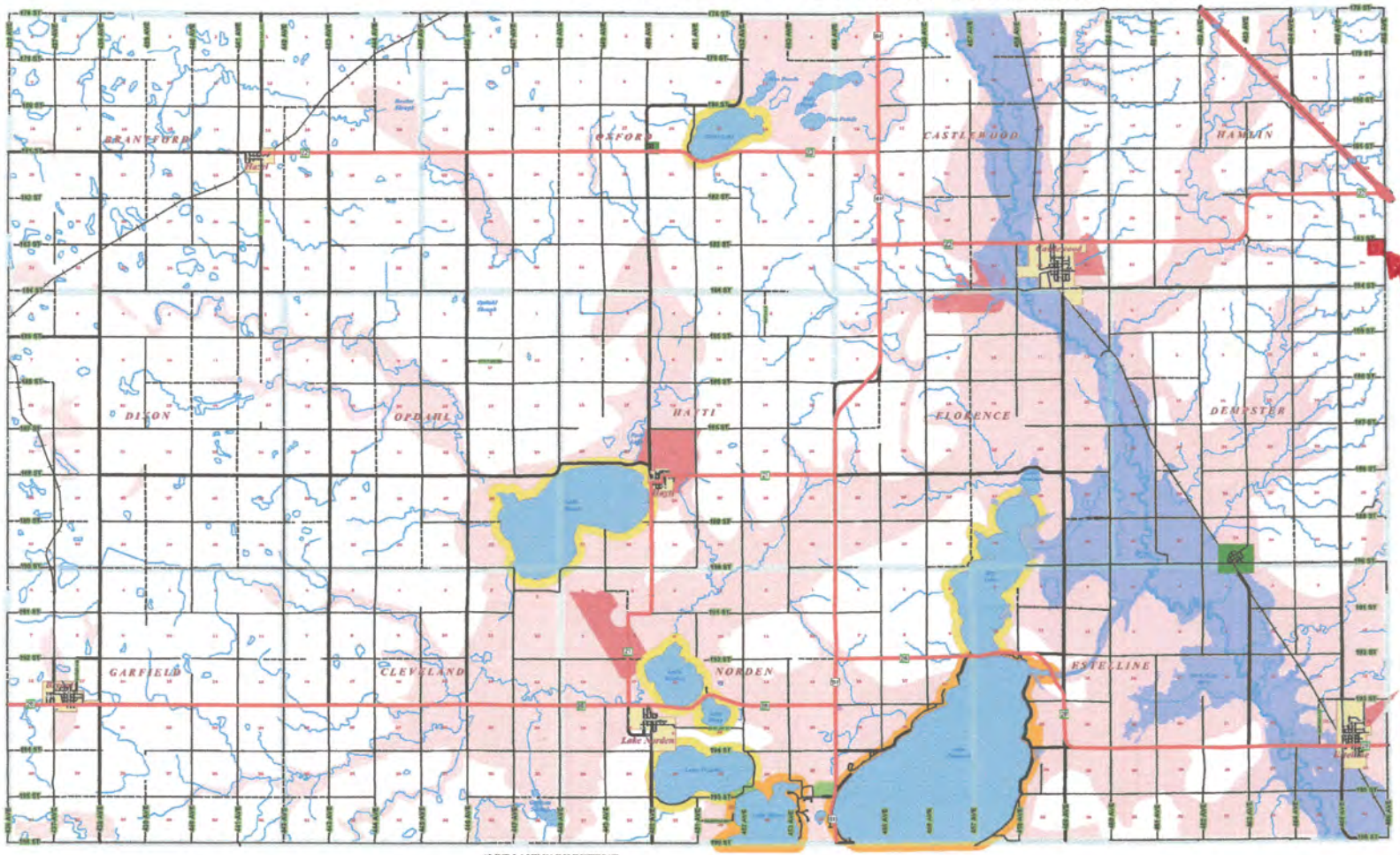
Kume, J., 1985, *Water resources of Deuel and Hamlin Counties, South Dakota*: U.S. Geological Survey Water-Resources Investigation Report 84-4069, 53 p.

South Dakota Geological Survey, Lithologic logs database

The Geological Survey, Department of Environment and Natural Resources, engages in an ongoing data collection and interpretation process. An outcome of that process is to reflect those interpretations on maps such as this one. Reasonable efforts have been made to ensure that this map accurately reflects the source data used in its preparation. This map is data specific. As additional data become available, geologic interpretations may be revised and the map may be updated by the Geological Survey. This map should not be enlarged or otherwise used in an attempt to interpret more detail than can be seen at the 1:100,000 scale.

Publication Date: June 29, 2001

HAMLIN COUNTY OFFICIAL ZONING MAP



This is to certify that this is the Official Zoning Map referred to in Section 1.03.01 of Ordinance 2011-2. This Official Zoning Map supercedes and replaces the Official Zoning Map adopted July 6, 2004 for Hamlin County, South Dakota.

Chairperson, Hamlin County Board of Commissioners Date

County Auditor Date

SITE

0 0.5 1 2 3 Miles

Legend

- Stream
- Highway/Interstate
- Hard Surface
- Gravel
- Low Maintenance
- Railroad
- Incorporated Municipalities
- AP-Aquiver Protection Overlay District - Zone A
- AP-Aquifer Protection Overlay District - Zone B
- "FP" Flood Plain Overlay District
- CN - Conservation District
- A-Agricultural District
- CI - Commercial/Industrial District
- "LP1" Lake Park District
- "LP2" Lake Park District
- PR - Planned Residential District

Amendments

1. 3.

2. 4.

"LP1" LAKE PARK DISTRICT:

- All land, unless otherwise zoned, within one thousand (1,000) feet of the normal high water line of Lake Pearrett, Lake Albert and within the boundaries of the Lake Poinsett Sanitary Sewer District

"LP2" LAKE PARK DISTRICT:

- All land, unless otherwise zoned, within one thousand (1,000) feet of the normal high water line of Lake Marsh, Lake Norden, Lake Mary, Lake John, Dry Lake, and Clear Lake

"AP" AQUIFER PROTECTION OVERLAY DISTRICT:

- Zone A is the zone of contribution as mapped by East Dakota Water Development District with South Dakota Geological Survey technical assistance using techniques outlined in the U.S. Environmental Protection Agency publication "Guidelines for Delineation of Wellhead Protection Areas", June, 1987.
- Zone B includes soils mapped as "Outwash" and "Sand and Gravel 0-50 ft" in the map entitled "First Occurrence of Aquifer Materials Map 11," dated June 29, 2001, created by the South Dakota Department of Environment and Natural Resources, Division of Financial and Technical Assistance, Geological Survey.

"CI" COMMERCIAL/INDUSTRIAL DISTRICT:

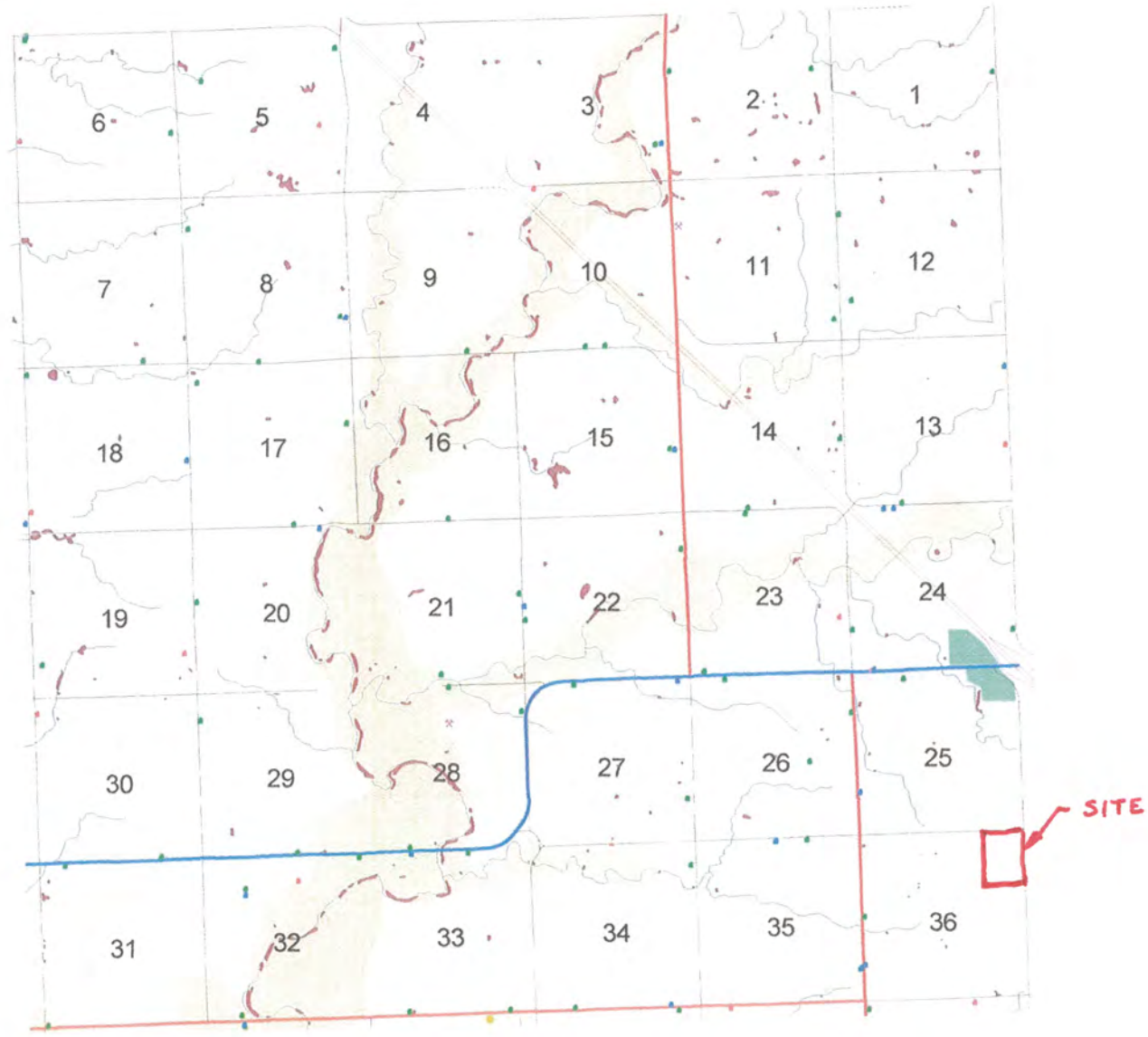
- Outlot 2 in the SWI/4 of Section 19-113-52 (Koens Korner)
- The South 615' of the East 378' in the SE1/4 of Section 30-115-52 (Alsville)

"CN" CONSERVATION DISTRICT:

- All lands, unless otherwise zoned, within three hundred (300) feet of an identified wetland or the Big Sioux River measured from the normal high water of the river. In addition, lands totally or partially owned by the State or Federal Governments as wildlife production or public shooting areas and all lands within one hundred (100) feet of an rendered lakes shall be included in the "CN" Conservation District.

"TP" TOWN DISTRICT:

- All land described in the original Plat of the Village of Thomas
- All land described in the original Plat of the Village of Dempster



Hamlin County
Comprehensive Land Use Plan
Hamlin Township
Future Land Use Map

N

- Area of Development Stability
- Area of Development Advantage
- Area of Development Transition
- Area of Development Limitation - 100-year Floodplain
- Area of Development Limitation - Wetland
- Area of Development Limitation - Wellhead Protection Area
- Area of Development Limitation - Shallow Aquifer
- Paved State Highways/I-29
- Paved County Highways
- Gravel
- Unimproved
- Railroad
- Stream
- Lake
- Existing Farm Residence
- Existing Non-farm Residence
- Abandoned/Unoccupied Residence
- Business
- Church
- Government Office
- Colony
- School
- Elevator
- Utility
- Cemetery
- Golf Course
- Landfill
- Garage
- Park
- Sports Field
- Gravel Pit

SOIL BORING LOG

Dakota Environmental Consultants, Inc. P.O. Box 636 Huron, SD 57350 (605) 352-5610

Boring # **SB 1**

Soil Description	WL	Depth	Geo.	Elevation	Sample ID	USCS
Topsoil		0.0	Topsoil	105.4	SB1 0'-1'	OL
		0.5		104.9		
		1.0		104.4		
		1.5		103.9		
		2.0		103.4		
		2.5		102.9		
		3.0		102.4		
		3.5		101.9		
		4.0		101.4		
		4.5		100.9		
		5.0		100.4		
		5.5		99.9		
		6.0		99.4		
		6.5		98.9		
		7.0		98.4		
		7.5		97.9		
		8.0		97.4		
		8.5		96.9		
		9.0		96.4		
		9.5		95.9		
		10.0		95.4		
Clay with sand, lt. brown/olive, moist, very stiff		10.5	Weathered Till	94.9	SB1 2'-30'	CL
		11.0		94.4		
		11.5		93.9		
		12.0		93.4		
		12.5		92.9		
		13.0		92.4		
		13.5		91.9		
		14.0		91.4		
		14.5		90.9		
		15.0		90.4		
		15.5		89.9		
		16.0		89.4		
		16.5		88.9		
		17.0		88.4		
		17.5		87.9		
		18.0		87.4		
		18.5		86.9		
		19.0		86.4		
		19.5		85.9		
		20.0		85.4		
		20.5		84.9		
		21.0		84.4		
		21.5		83.9		
		22.0		83.4		
		22.5		82.9		
		23.0		82.4		
		23.5		81.9		
		24.0		81.4		
		24.5		80.9		
		25.0		80.4		
		25.5		79.9		

NOTES: No water observed @ time of boring.

Water Level:	None @ TOB	DEC #	Date of Boring: 5/27/2003
Method:	Split Spoon	23015	Page: 1 of 2
Driller:	DD	Chkd by: BF	Elevation: 105.4
Sampler:	MH	Project:	
Recorded By:	MH	**Sunrise Dairy AWMS**	
Entered By/Date:	RR 5/28/03		

SOIL BORING LOG

Dakota Environmental Consultants, Inc. P.O. Box 636 Huron, SD 57350 (605) 352-5610

Boring # **SB 1**

Soil Description	WL	Depth	Geo.	Elevation	Sample ID	USCS
Clay with sand, lt. brown/olive, moist, very stiff		26.0		79.4		
		26.5		78.9		
		27.0		78.4		
		27.5		77.9	SB1 2'-30'	
		28.0		77.4		
		28.5		76.9		
		29.0		76.4		
		29.5		75.9		
Clay with sand, brown, moist, very stiff		30.0	Weathered Till	75.4		
		30.5		74.9		
		31.0		74.4		
		31.5		73.9		
		32.0		73.4		
		32.5		72.9		
		33.0		72.4		
		33.5		71.9		
		34.0		71.4		
		34.5		70.9	SB1 30'-40'	
		35.0		70.4		
		35.5		69.9		
		36.0		69.4		
		36.5		68.9		
		37.0		68.4		
		37.5		67.9		
		38.0		67.4		
		38.5		66.9		
		39.0		66.4		CL
		39.5		65.9		
Clay with sand, dark brown, moist, very stiff		40.0		65.4		
		40.5		64.9		
		41.0		64.4		
		41.5		63.9		
		42.0		63.4		
		42.5		62.9		
		43.0		62.4		
		43.5		61.9		
		44.0		61.4		
		44.5		60.9	SB1 40'-50'	
		45.0		60.4		
		45.5		59.9		
		46.0		59.4		
		46.5		58.9		
		47.0		58.4		
		47.5		57.9		
		48.0		57.4		
		48.5		56.9		
		49.0		56.4		
		49.5		55.9		
END OF BORING		50.0		55.4		
		50.5		54.9		
		51.0		54.4		
		51.5		53.9		

NOTES: No water observed @ time of boring.

Water Level:	None @ TOB	DEC #	Date of Boring: 5/27/2003
Method:	Split Spoon	23015	Page: 2 of 2
Driller:	DD	Chkd by: BF	Elevation: 105.4
Sampler:	MH	Project:	
Recorded By:	MH	**Sunrise Dairy AWMS**	
Entered By/Date:	RR 5/28/03		

SOIL BORING LOG

Dakota Environmental Consultants, Inc. P.O. Box 636 Huron, SD 57350 (605) 352-5610

Boring # **SB 2**

Soil Description	WL	Depth	Geo.	Elevation	Sample ID	USCS
Topsoil		0.0	Topsoil	104.3	SB2 0'-2'	OL
		0.5		103.8		
		1.0		103.3		
		1.5		102.8		
Clay with sand, lt. brown/olive, moist, very stiff		2.0	Weathered Till	102.3	SB2 2'-14'	CL
		2.5		101.8		
		3.0		101.3		
		3.5		100.8		
		4.0		100.3		
		4.5		99.8		
		5.0		99.3		
		5.5		98.8		
		6.0		98.3		
		6.5		97.8		
		7.0		97.3		
		7.5		96.8		
		8.0		96.3		
		8.5		95.8		
		9.0		95.3		
		9.5		94.8		
		10.0		94.3		
		10.5		93.8		
		11.0		93.3		
		11.5		92.8		
		12.0		92.3		
		12.5		91.8		
		13.0		91.3		
		13.5		90.8		
Clay with sand, light brown/olive, moist, med. stiff		14.0		90.3	SB2 14'-24'	
		14.5		89.8		
		15.0		89.3		
		15.5		88.8		
		16.0		88.3		
		16.5		87.8		
		17.0		87.3		
		17.5		86.8		
		18.0		86.3		
		18.5		85.8		
		19.0		85.3		
		19.5		84.8		
		20.0		84.3		
		20.5		83.8		
		21.0		83.3		
		21.5		82.8		
		22.0		82.3		
		22.5		81.8		
		23.0		81.3		
		23.5		80.8		
END OF BORING		24.0		80.3		
		24.5		79.8		
		25.0		79.3		
		25.5		78.8		

NOTES: No water observed @ time of boring.

Water Level:	None @ TOB	DEC #	Date of Boring: 5/27/2003
Method:	Split Spoon	23015	Page: 1 of 1
Driller:	DD	Chkd by: BF	Elevation: 104.3
Sampler:	MH	Project:	
Recorded By:	MH	**Sunrise Dairy AWMS**	
Entered By/Date:	RR 5/28/03		

SOIL BORING LOG

Dakota Environmental Consultants, Inc. P.O. Box 636 Huron, SD 57350 (605) 352-5610

Boring # **SB 3**

Soil Description	WL	Depth	Geo.	Elevation	Sample ID	USCS
		0.0		104.1		
Topsoil		0.5	Topsoil	103.6	SB3 0'-1'	OL
		1.0		103.1		
		1.5		102.6		
		2.0		102.1		
		2.5		101.6		
		3.0		101.1		
		3.5		100.6		
		4.0		100.1		
		4.5		99.6		
Clay with sand, lt. brown/olive, moist, very stiff		5.0		99.1	SB3 1'-10'	
		5.5		98.6		
		6.0		98.1		
		6.5		97.6		
		7.0		97.1		
		7.5		96.6		
		8.0		96.1		
		8.5		95.6		
		9.0		95.1		
		9.5		94.6		
		10.0		94.1		
		10.5	Weathered	93.6		CL
		11.0	Till	93.1		
		11.5		92.6		
		12.0		92.1		
		12.5		91.6		
		13.0		91.1		
		13.5		90.6		
		14.0		90.1		
		14.5		89.6		
		15.0		89.1		
		15.5		88.6		
Clay with sand, light brown/olive, moist, med. stiff		16.0		88.1	SB3 10'-24'	
		16.5		87.6		
		17.0		87.1		
		17.5		86.6		
		18.0		86.1		
		18.5		85.6		
		19.0		85.1		
		19.5		84.6		
		20.0		84.1		
		20.5		83.6		
		21.0		83.1		
		21.5		82.6		
		22.0		82.1		
		22.5		81.6		
		23.0		81.1		
		23.5		80.6		
END OF BORING		24.0		80.1		
		24.5		79.6		
		25.0		79.1		
		25.5		78.6		

NOTES: No water observed @ time of boring.

Water Level:	None @ TOB
Method:	Split Spoon
Driller:	DD
Sampler:	MH
Recorded By:	MH
Entered By/Date:	RR 5/28/03

DEC # 23015

Chkd by: BF

Date of Boring: 5/27/2003

Page: 1 of 1

Elevation: 104.1

Project: **Sunrise Dairy AWMS**

SOIL BORING LOG

Dakota Environmental Consultants, Inc. P.O. Box 636 Huron, SD 57350 (605) 352-5610

Boring # **SB 4**

Soil Description	WL	Depth	Geo.	Elevation	Sample ID	USCS
Topsoil		0.0	Topsoil	104.9	SB4 0'-1.5'	OL
		0.5		104.4		
		1.0		103.9		
Clay with sand, lt. brown/olive, moist, very stiff		1.5		103.4	SB4 1.5'-10'	
		2.0		102.9		
		2.5		102.4		
		3.0		101.9		
		3.5		101.4		
		4.0		100.9		
		4.5		100.4		
		5.0		99.9		
		5.5		99.4		
		6.0		98.9		
		6.5		98.4		
		7.0		97.9		
		7.5		97.4		
		8.0		96.9		
		8.5		96.4		
		9.0		95.9		
		9.5		95.4		
Clay with sand, light brown/olive, moist, med. stiff		10.0	Weathered Till	94.9	SB4 10'-24'	CL
		10.5		94.4		
		11.0		93.9		
		11.5		93.4		
		12.0		92.9		
		12.5		92.4		
		13.0		91.9		
		13.5		91.4		
		14.0		90.9		
		14.5		90.4		
		15.0		89.9		
		15.5		89.4		
		16.0		88.9		
		16.5		88.4		
		17.0		87.9		
		17.5		87.4		
		18.0		86.9		
		18.5		86.4		
		19.0		85.9		
		19.5		85.4		
		20.0		84.9		
		20.5		84.4		
		21.0		83.9		
		21.5		83.4		
		22.0		82.9		
		22.5		82.4		
		23.0		81.9		
		23.5		81.4		
		24.0		80.9		
		24.5		80.4		
END OF BORING		25.0		79.9		
		25.5		79.4		

NOTES: No water observed @ time of boring.

Water Level:	None @ TOB	DEC #	Date of Boring: 4/15/2004
Method:	Split Spoon	23015	Page: 1 of 1
Driller:	DD	Chkd by: BF	Elevation: 104.9
Sampler:	WW	Project:	
Recorded By:	DD	**Sunrise Dairy AWMS**	
Entered By/Date:	RR 4/15/04		

SOIL BORING LOG

Dakota Environmental Consultants, Inc. P.O. Box 636 Huron, SD 57350 (605) 352-5610

Boring # **SB 5**

Soil Description	WL	Depth	Geo.	Elevation	Sample ID	USCS
Topsoil		0.0	Topsoil	104.1	SB5 0'-1.5'	OL
		0.5		103.6		
		1.0		103.1		
Clay with sand, lt. brown/olive, moist, very stiff		1.5		102.6	SB5 1.5'-10'	
		2.0		102.1		
		2.5		101.6		
		3.0		101.1		
		3.5		100.6		
		4.0		100.1		
		4.5		99.6		
		5.0		99.1		
		5.5		98.6		
		6.0		98.1		
		6.5		97.6		
		7.0		97.1		
		7.5		96.6		
		8.0		96.1		
		8.5		95.6		
		9.0		95.1		
		9.5		94.6		
Clay with sand, light brown/olive, moist, med. stiff		10.0	Weathered Till	94.1	SB5 10'-24'	CL
		10.5		93.6		
		11.0		93.1		
		11.5		92.6		
		12.0		92.1		
		12.5		91.6		
		13.0		91.1		
		13.5		90.6		
		14.0		90.1		
		14.5		89.6		
		15.0		89.1		
		15.5		88.6		
		16.0		88.1		
		16.5		87.6		
		17.0		87.1		
		17.5		86.6		
		18.0		86.1		
		18.5		85.6		
		19.0		85.1		
		19.5		84.6		
		20.0		84.1		
		20.5		83.6		
		21.0		83.1		
		21.5		82.6		
		22.0		82.1		
		22.5		81.6		
		23.0		81.1		
		23.5		80.6		
		24.0		80.1		
		24.5		79.6		
END OF BORING		25.0		79.1		
		25.5		78.6		

NOTES: No water observed @ time of boring.

Water Level:	None @ TOB	DEC #	Date of Boring: 4/15/2004
Method:	Split Spoon	23015	Page: 1 of 1
Driller:	DD	Chkd by: BF	Elevation: 104.1
Sampler:	WW	Project:	
Recorded By:	DD	**Sunrise Dairy AWMS**	
Entered By/Date:	RR 4/15/04		

SOIL BORING LOG

Dakota Environmental Consultants, Inc. P.O. Box 636 Huron, SD 57350 (605) 352-5610

Boring # **SB 6**

Soil Description	WL	Depth	Geo.	Elevation	Sample ID	USCS
Topsoil		0.0	Topsoil	106.5	SB6 0'-1.5'	OL
		0.5		106.0		
		1.0		105.5		
Clay with sand, lt. brown/olive, moist, very stiff		1.5		105.0	SB6 1.5'-10'	
		2.0		104.5		
		2.5		104.0		
		3.0		103.5		
		3.5		103.0		
		4.0		102.5		
		4.5		102.0		
		5.0		101.5		
		5.5		101.0		
		6.0		100.5		
		6.5		100.0		
		7.0		99.5		
		7.5		99.0		
		8.0		98.5		
		8.5		98.0		
		9.0		97.5		
		9.5		97.0		
Clay with sand, light brown/olive, moist, med. stiff		10.0	Weathered Till	96.5	SB6 10'-24'	CL
		10.5		96.0		
		11.0		95.5		
		11.5		95.0		
		12.0		94.5		
		12.5		94.0		
		13.0		93.5		
		13.5		93.0		
		14.0		92.5		
		14.5		92.0		
		15.0		91.5		
		15.5		91.0		
		16.0		90.5		
		16.5		90.0		
		17.0		89.5		
		17.5		89.0		
		18.0		88.5		
		18.5		88.0		
		19.0		87.5		
		19.5		87.0		
		20.0		86.5		
		20.5		86.0		
		21.0		85.5		
		21.5		85.0		
		22.0		84.5		
		22.5		84.0		
		23.0		83.5		
		23.5		83.0		
		24.0		82.5		
		24.5		82.0		
END OF BORING		25.0		81.5		
		25.5		81.0		

NOTES: No water observed @ time of boring.

Water Level:	None @ TOB	DEC #	Date of Boring: 4/15/2004
Method:	Split Spoon	23015	Page: 1 of 1
Driller:	DD	Chkd by: BF	Elevation: 106.5
Sampler:	WW	Project:	
Recorded By:	DD	**Sunrise Dairy AWMS**	
Entered By/Date:	RR 4/15/04		